THE OIL WEEKLY

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The Oil Man's Calendar

FEB. 9–12	American Institute of Mining and Metallurgical Engineers, Annual Meeting, New York.
26–27	American Petroleum Institute Division of Production, Southwestern District, Dallas, Texas.
28	North Texas Oil and Gas Association, Wichita Falls, Texas.
MAR. 23–25	American Society of Mechanical Engineers, Houston, Texas.
APRIL 16–17	National Petroleum Association, Thirty-ninth Semi-Annual Meeting, Hotel Cleveland, Cleveland, Ohio.
21–24	American Association of Petroleum Geologists, Twenty-seventh Annual Meeting, Cosmopolitan Hotel, Denver, Colorado
22–24	Petroleum Industry Electrical Association, Shreveport, Louisiana.
NOV. 9–13	American Petroleum Institute, Chicago.

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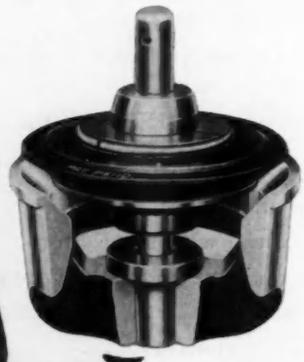

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The Changing Panorama

Need Detailed Survey Of Drilling Rigs

A Complete Analysis Would Provide Information Of Importance

The need for a high rate of drilling activity and the necessity of accomplishing this feat with the use of as little steel as absolutely possible, makes it vitally important that the industry have a complete check-up on its drilling-rig status.

As long as new replacements are available, convenience and speed of repair indicate their almost exclusive use. But when available stocks are exhausted as appears probable, the industry will be forced to rely upon swapping, combining, additional repair work and even the time-honored practice of "robbing" some idle unit that others may continue to run.

For such work to be effective industry wide, an accurate survey of the number of drilling rigs, that will classify them as to type and give data on probable useful life, disability of some vital part, possible interchangeability of parts from one unit to another, and other vital statistics is needed.

With basic data on the number and service life of rigs, including those in operation, idle and stacked, it would be possible to predict with some degree of accuracy the extent to which replacement parts would be required during the next 12 months. With this information, steps could be taken to provide priorities and make plans for procuring necessary replacement parts to keep many of these rigs in steady service.

It is late for the industry to begin to take stock, late to attempt to provide a statistical basis with serviceability ratings on each unit, but the sooner such a procedure is initiated and carried out, even if somewhat incomplete, the sooner will it be possible to forecast replacement demand, to combine, if necessary, usable parts from two or more units now operating independently. These steps should prove of inestimable value in permitting the industry to drill a maximum number of wells with the least amount of new steel.

Such surveys can probably best be made through the instrumentality of an appropriate organization already set up, and in this case the one-year-old American Association of Oilwell Drilling Contractors appears ideal. It is to be hoped that all drilling contractors, including non-members as well as members of the association, participate actively in the survey which is already proposed by the association's officials.

Rubber From Gas . . .

The petroleum industry's greatest waste product—natural gas—may be used as the basis for manufacturing synthetic rubber, Thus, two birds may be killed with one stone, the shortage of rubber being at least partially overcome and the waste of gas in oil fields materially reduced.

Plans for production of synthetic rubber from natural gas were taking preliminary shape last week, following announcement that the University of Texas industrial chemistry bureau had found a method for accomplishing this. Details of the process were not made public, pending issuance of a patent in the name of the university, but Dr. E. P. Schock, director of the university's industrial chemistry bureau, admitted "We have lots of work to do yet." Although details were withheld, it was understood that the process contemplated using natural gas now burned in flares as a waste product, and that rubber made by the method would cost about the same as that now produced commercially but would wear much longer.

The university's bureau has worked for years on research dealing with finding some effective method of harnessing waste gas, the creation of new uses for it, and development of other products so it can be disposed of profitably.

Governor Coke R. Stevenson revealed he was prepared to finance the perfection of the process by issuing deficiency warrants. This followed an announcement by United States Senator W. Lee O'Daniel of Texas that he would ask Congress for an appropriation with which to construct plants for manufacturing rubber from the state's vast stores of natural gas.

Aviation Fuel Needs Urgent Problem

Expansion Beyond Present Plans Tripling Output May Be Necessary

Recent consumption estimates indicate that plans to triple the United States 100-octane gasoline manufacturing capacity are not excessive, and that at present the situation is critical.

It is reported that Great Britain's need for 100-octane fuels has jumped from 5000 barrels daily at the start of the war to about 36,000 barrels at present. Russian requirements, negligible at first, are said to be running around 25,000 barrels. Current consumption of this commodity in the United States is unknown, but since only relatively small quantities of aviation gasoline are made outside the United States, this country's current capacity of 50,000 barrels daily is being taxed to its utmost.

Now that the United States itself is at war, this country will require much more aviation fuel for its own forces. During 1942 the United States' own needs may reach 50,000 barrels daily, it has been estimated. Both Great Britain and Russia will require steadily larger quantities in the future, especially England now that she is fighting in the Far East as well as in Europe and Africa. Moreover, the United States may be called upon to supply smaller quantities to other countries.

The manufacture of sufficient super-fuel to permit planes of the United States and her Allies to maintain their speed load and maneuverability advantages for the enemy aircraft, along with adequate bunkering oil from the growing United States Navy, is the industry's foremost current war responsibility. And time is short, as indicated by the recent decision to allow the use of 4 cubic centimeters of tetraethyl lead instead of the former 3 cubic centimeters, and thus boost the nation's aviation gasoline manufacturing capacity from 40,000 to 50,000 barrels daily. Construction work on the planned aviation gasoline plants should be rushed to completion rapidly.

California Troubles . . .

Due to the necessity of immediately moving large quantities of petroleum products to Hawaii and Far East localities in the Pacific war zone, an acute shortage of tanker facilities likely will result in disruption of many California operations.

Whereas current conditions normally could be expected to result in a big production increase, transportation shortages are likely to require that a number of fields dependent upon tankers for moving production to refining centers be closed in. Consequently, California crude production may fall more than 100,000 barrels daily to a figure around 500,000 barrels. This situation will continue to exist until new pipe lines can be constructed and tankers can be diverted to the region from the Atlantic Seaboard.

Meanwhile, rationing of gasoline in the Pacific Northwest, which normally depends largely upon tanker shipments to fill consumer requirements, looms as a distinct immediate probability as soon as details can be arranged. Motorists also face the necessity of using lower grades of gasoline, as regular and premium grades will be stepped up to aviation fuel ratings wherever possible, and cracking operations will be reduced so as to expand fuel oil supplies needed by the Navy.

Stores Not Closed . . .

Reports that supply companies were planning to close field stores, current in the Gulf Coast and some other areas early in the week, have proven unfounded. The rumor probably arose because of the fact that one company sent out orders to its stores to stop selling, possibly because of a misunderstanding of word out of Washington. This company's stores were closed for two hours and opened up again. So far as can be learned from supply companies, no shutdown is contemplated.

Hoard Heating Oil . . .

Something besides the first real cold weather spell is causing the sudden large spurt in sale of heating oil in the North Atlantic area. The wintry blast has been neither severe or prolonged enough to create a reduction of 1,453,000 barrels in East Coast light heating oil during the week ended December 20.

Forewarned by transportation difficulties experienced last summer due to the diversion of tankers to Great Britain, many users of fuel oil for heating purposes probably anticipate another similar but more serious condition because of the Pacific War and need for additional tankers there, and are laying in supplies.

However, the supply of home fuel oil on the East Coast seems adequate for the current winter, stocks being 4,716,000 barrels greater on December 20 than a year ago.

SAVE PAPER!

A serious shortage of wastepaper threatents, due to wartime difficulties that have curtailed the importation of wood pulp and at the same time greatly accelerated industrial and military usage of paper boxes, containers and wrapping paper. Large quantities of these are used in shipping military equipment. Wastepaper is the chief raw material in the manufacture of them.

An ideal way of contributing your share to this phase of national defense is to save all newspapers and magazines. When your stack of old newspapers and magazines is about five feet high, telephone some local charity and a truck will come to your house or office to collect the material.

Everyone is urged to cooperate in this enterprise.

Commendable Action . . .

A commendable move is that of Standard Oil Company of New Jersey to immediately enlarge its previous military training benefits to employes who enter United States military services. Effective the date the United States declared war on Japan, the company will—

1. Grant all regular employes a special leave of absence for duration of the conflict and up to six months thereafter, or until 40 days after their discharge in the event they leave the service earlier.

2. Pay two months' wages to employes who have been one year with the company, and one month's pay to regular employes with less than a year's service.

3. Pay to dependents of regular employes with the company a year or more the difference between the amount which they receive from the government and their normal earnings with the company, provided this payment by the company does not exceed 50 percent of their earnings at the time they left to join the armed forces.

New Oil Competitor . . .

There can be no question but that the war will establish forever the importance of petroleum to national economy and defense. Likewise, the world probably will become more highly mechanized, and thus require larger quantities of petroleum. This would indicate that oil can look forward to a very promising era of development and consumption following the war.

But one should not overlook entirely that the same conditions which will cause every nation to intensify its efforts to become self-sufficient in oil, also will be responsible for the development of a new competitor to natural petroleum. We are thinking of synthetic oils, which in some parts of the world already have reached sizeable proportions. Today Germany has built up a large synthetic oil industry, which is playing a vital role in keeping the country's mechanized armies in the thick of the battle. Japan and Italy are doing likewise, and other countries are developing synthetic oil industries to a lesser degree. Even in the United States, currently producing 60 percent of the world's natural petroleum and exporting considerable quantities, chemists are studying the production of gasoline and other products from coal, shales and vegetables. The synthetic petroleum industry should receive great impetus from the war, certainly all nations not blessed with a sufficient supply source for natural crude oils will give careful thought toward developing synthetics.

It is not beyond the realm of scientific possibility that improved processes and better raw material sources are likely to be developed under intensified world-wide research efforts, raising synthetics to the point they can compete on more equal ground with natural oils. If this should come about, the synthetic petroleum industry will rapidly attain sizeable proportions, and thereby become a recognized competitor to the natural petroleum industry.

Oil Priority Rating Plans Being Completed

PLANS providing means for obtaining priority ratings and a steady flow of "needed" equipment for all branches of the industry are rapidly maturing in the Office of Production Management, but it became evident last week that some days will elapse before Order P-98, setting the preference ratings to be followed under Conservation Order M-68, issued December 23, will be promulgated.

The OPC, however, last week did outline the procedure by which applications might be made for exceptions (see page 12) to Conservation Order M-68 that come under provisions of Paragraph (C) (9) of the order.

Meanwhile, J. T. Sanders, chief of the petroleum machinery section of the industrial and office machinery branch of OPM, has sent to all manufacturers of oil machinery and equipment a questionnaire through which allocations of strategic materials will be made for quarterly periods.

Current Procedure

While manufacturers will be supplied with materials under either the production requirements plan or by PD-1 applications, supply houses will draw materials and products from manufacturers under P-83 applications, and oil operators, in turn, will get equipment under Order P-98 soon to be issued.

Until that order is promulgated, however, operators may obtain supplies under the general provisions of the maintenance and repair order, P-100, or by individual applications on PD-1 forms.

Pending the final drafting of P-98, OPM officials are withholding comment and all explanation other than that it will set the preference ratings for various activities in all four branches of the industry.

Probable Ratings

In line with ratings given in other orders, however, it is to be expected that the highest rating (A-1-a) will be given for discovery equipment such as is used for location of possible pools by scientific methods.

A rating of A-1-c is likely to be extended to equipment for wildcatting, but a serious problem has been raised by the definition of exploratory wells given in Conservation Order M-68, as "any well located not less than two miles from any well capable of producing petroleum," which is expected to be followed in P-98.

In many regions, exploratory work is carried on at distances much less than two miles from developed wells, and the OPM definition in the conservation order, if permitted stand, will eliminate important sources of new oil.

In view of the importance of aviation gasoline development, it is seen as possible that the preference order will not cover cycling plants or condensate pools, which will be handled individually.

Similarly, in the refining branch, it is probable that all aviation gasoline facilities will be given an A-1-a rating, with other refining classified A-8.

An A-8 rating is expected also to be provided for the drilling of new wells in already developed fields.

Tire Sales

There is some question as to how the industry will be affected by the ban on tire sales, but it is understood OPM tire orders are to be interpreted in such a way as to assure the maintenance of necessary truck service in all branches of the oil industry.

This is particularly necessary, since practically every piece of field equipment must be hauled to the lease from supply point or railroad station. At the same time, a considerable volume of oil is moved from wells to refineries by trucks, as well as from refineries to consuming points, to say nothing of delivery of heating oils to homes and business establishments.

But with the issuance of P-98, OPM will have mapped out the route by which all branches of the industry will secure supplies for all necessary activities, in a way which officials hope will raise as few problems, minimize delays and obviate hardships.

Allocations to Suppliers

The questionnaire sent to manufacturers of oil machinery which some suppliers state is not feasibly workable, calls for information regarding production for the third and fourth quarters of 1941 and an estimate for the first quarter this year; details of inventory on June 30 and September 30, last, and a report of the types and quantities of the various scarce materials used and expected to be needed.

While the production requirements plan will make it possible for a manufacturer to present a complete picture of his priority needs for three months at a time, its use is optional and manufacturers not desiring to take advantage of the plan can continue to file the PD-1 applications as need arises.

In a letter to manufacturers, explaining the plan, J. T. Sanders, head of OPM petroleum machinery section, pointed out that:

"It provides for rating all materials which you contemplate you will need during the first quarter of 1942. Furthermore, if your manufacturing cycle is over three months, provision may be made for such an extended period by filing two or more quarterly applications at the same time.

"It provides flexibility for taking care of unforeseen emergencies during the three-months period by making it possible to present a special request, based upon the cir-

[*Continued on page 42*]

OPC Outlines Procedure for Filing Exception Applications to Conservation Order M-68

The procedure in which application may be made for exceptions from the requirements of Conservation Order M-68, to cover the entire future development program of an oil, gas or condensate field, or of a particular property or group of properties; for the development of any property by any operator in any oil, gas or condensate field; or for new construction of gasoline, gas return, pressure maintenance or cycling plants, was outlined January 2 by the OPC.

The forms are those provided for in Paragraph (C) (9) of the order (see page 12, THE OIL WEEKLY of December 29, 1941), holding that the provision of Paragraph (B) for conservation of material used in production shall not apply:

"To any case where the Director of Priorities, Office of Production Management, upon recommendation of the Office of Petroleum Coordinator, has determined that production is necessary by any operator or in any field where any conditions in such field make it necessary and appropriate in the public interest and to promote the war effort."

Applications for exceptions must be filed in quadruplicate with Robert E. Allen, director of production of the OPC.

No official form has been prepared for applications, those issued by the OPC merely defining the information which is required.

In the case of an application for an exception for the development of any property by any operator in any field, the following must be furnished:

A. Name and address of applicant.

B. Name and location of field and properties where requested materials and equipment are to be used.

C. Applicants proposed future development or construction:

1. Number and spacing of wells on group of properties owned (show locations on map or plat).
2. Describe other proposed plants or facilities.
3. Material requirements segregated for (A) wells and lease equipment, (B) gathering lines and pipeline systems, (C) other plants or facilities.

D. Indicate all reasons justifying the granting of an exception as provided in Paragraph (C) (9) of Conservation Order M-68, together with such supplemental data as will clearly show the relationship of the applicants needs to the national defense program.

E. Each application for an exception shall bear the following certification executed in quadruplicate: The undersigned hereby certifies to the director of priorities that:

1. The foregoing application has been executed on behalf of and by authority of the above named applicant.
2. The facts stated in the foregoing application are to the best of my knowledge and belief, true and correct.
3. If the exception hereby applied for is granted, use of material existing in stock or obtained by means of any applicable preference rating certificate or order will be made solely in accordance with the terms of the exception which has been granted, and further, solely in accordance with the provisions of Conservation Order M-68.

.....(Date)

.....
(Signature and Title of Official)

Section 35 (A) of the United States Criminal Code 18 U.S.C.A. 80, makes it a criminal offense to make a false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

Applications for exceptions to cover the entire future development program of a field or property, the following data will be required:

A. Field description (furnish to extent reasonably available).

1. Map of field or properties showing ownerships and all wells, with proper designation of types, including all proposed locations.
2. Reservoir data.
   (A) Subsurface structure map and suitable cross-sections, showing productive horizons and water and gas levels.
   (B) Formation data, general description including type, average porosity, permeability, connate water saturation.
   (C) Character of oil, describing quality, gravity, octane value of gasoline fraction, subsurface sample data, etc.
3. Estimate of original recoverable reserves of oil, free gas, dissolved gas, for entire field and for group of properties owned.

B. Operating data (furnish to extent reasonably available).

1. Production of oil, gas, water, cumulatively pool or field and for group of properties owned.
2. Number wells already drilled in field and on group of properties owned, including oil, gas, dry, flowing, pumping, gas lift.
3. Reservoir pressure, original and history to date.
4. Disposition of oil and gas produced.
5. Names and capacities of pipelines serving field.
6. Describe and present operating data on any gasoline, cycling, gas return plants; water flooding or disposal operations; or other auxiliary or secondary recovery operations involved.

C. Proposed future development or construction.

1. Number and spacing of wells on group of properties owned (show locations on map or plat).
2. Describe other proposed plants or facilities.

Any other data or information which will help to determine the importance and urgency of the field exception.

Applications covering new construction must show the following information:

List of all important items of equipment or material for plant and auxiliary facilities, stating (1) description, such as would be given on a purchase order, (2) use or purpose, (3) specification, (4) composition, (5) weight and/or size, (6) cost, (7) schedule of required delivery dates, (8) total cost of all materials and equipment, (9) flow sheet of process showing interrelation of equipment.

In a brief prospectus:

1. Describe the proposed plant or project and its operation and purpose including (A) total cost, (B) gas processing or handling capacity, (C) sources and amounts of gas deliveries to plant by ownership, (D) production, its products and production rates, (E) disposition of all processed gas from plant and of all products, showing volumes, (F) other results of project and operation, (G) names and capacities of other similar plants operating or under construction in the same field.
2. Describe the oil and/or gas field or reservoir (as a whole) and its development and operation including (A) estimates of oil and/or gas and condensate reserves, (B) gas analysis and recoverable liquid content, (C) or original dissolved gas content of oil, (D) productive oil and/or gas acreage, (E) plan or development and operation of field, (F) well spacing plan for producing and input wells, (G) number of oil and/or gas producing wells and of input wells, (H) names and addresses of principal operators, (I) rates of oil and/or gas and condensate production from the field and by principal operators, (J) past production and production rates, reservoir pressure—original and current, (K) maps and sections, showing ownerships, wells and depths, structure, production horizons and thicknesses, productive area.
3. Any other data or information which will help to determine the importance and urgency of the project.

Washington Roundup

OPC and OPM trying to develop priority forms that will remove existing confusion . . . Sharp gasoline consumption curtailment expected as result of tire and automobile sale restrictions . . . Extend Texas crude raise

By B. F. LINZ, Washington Correspondent

YEAR-END holidays slowed down activities on the Washington oil front last week, but only temporarily, as government and industry sought to catch up with the developments of the most momentous month in years.

In the appropriate divisions of both OPC and OPM energies were devoted to the development of the forms (see pages 11 and 12) through which all branches of the industry hereafter will secure supplies, under Conservation Order M-68 and Priorities Order P-83. Forms P-98 and PD-82A, respectively, are now in process of preparation. The former will be used to facilitate the acquisition of material by all branches of the industry, assigning definite preference ratings for deliveries of materials for specific purposes. The latter is the form to be used by supply houses to benefit by P-83, to obtain material from the manufacturers, and will be handled through the OPC.

With the sale of new automobiles banned on the heels of a prohibition of further tire sales, the industry was confronted with a sharp curtailment of its gasoline market, but the Bureau of Mines, in its monthly demand forecast, saw little threat of excessive inventories piling up in the face of steadily increasing defense demands.

The OPC during the week paved the way for the securing of exceptions from the ban on purchase and sale of production equipment under M-68, issuing an outline of the information which is to be submitted by operators asking for relief.

First monthly meeting of the industry council early next week may bring some interesting developments. Agenda for the meeting is being left to the council itself.

Other developments to watch are the setting up of natural gas and natural gasoline industry committees and the naming of a chief for the natural gas and natural gasoline field unit in Houston. The industry committees, five of them, probably will total about 50 men, representative of all types of interest. The unit is being set up in Houston in recognition of the fact that District No. 3 will be the area of greatest development of hydrocarbons essential to the manufacture of 100 octane aviation gasoline.

Rationing

Rationing of gasoline in the East as a result of the transfer of tankers to the West Coast may be delayed, possibly avoided, by the OPM ban on the sale of new tires and automobiles.

OPC officials estimated this week that the tire ban may reduce civilian gasoline consumption by as much as 35 percent this year. To conserve what rubber they may have, motorists are expected to drive less and slower.

Gasoline-rationing plans, prepared during the shortage scare last summer, are on file in OPC, and can be dusted off at any time for immediate application should necessity arise. It had been rumored that rationing might be expected by next spring, but it is now considered probable that it may be delayed many months if OPM adheres to its decision not to permit the general public to buy new tires.

OPC's weekly report on East Coast inventories for the period ended December 20 showed a total supply of 64,564,000 barrels, an increase of 6,936,000 barrels over the corresponding period in 1940, but 1,322,000 barrels under stocks on December 13, 1941.

With the exception of crude oil, where stocks of 12,055,000 barrels showed a decline of 1,435,000 barrels, all classes were above the 1940 level; gasoline stocks of 20,218,000 barrels showing an increase of 2,432,000 barrels; light heating oils, 19,693,000 barrels, up 4,716,000; and heavy fuel oil, 12,598,000 barrels, up 1,223,000 barrels.

Use of railroad tank cars continued the steady decline maintained for some weeks, with only 1742 moving into the East Coast territory, an average daily movement of 249 cars, or 56,025 barrels, against 266 cars, or 59,850 barrels during the week ended December 13.

Extend Texas Crude Raise

The higher price for North and North Central crude permitted by the Office of Price Administration last month in an order narrowing from seven to four cents a barrel the spread between that price and the Oklahoma price, has been extended to six additional Texas counties.

The three-cent adjustment was extended to Comanche, Fisher, Haskell, Jones, Taylor and Throckmorton counties under an order issued January 1, and was made retroactive to December 11, the date on which it was permitted in the other 17 counties.

Bureau Forecast

Position of the oil industry under war conditions still remains clouded, but there is little fear of the development of excessive inventories in the face of the increased demand that is bound to come despite any restrictions which may be imposed upon civilian consumption, it was indicated by the Bureau of Mines December 1 in its monthly forecast.

"It is not yet possible to evaluate accurately the various changes

in total demand that will result from the war situation, particularly with respect to the relation between increasing defense requirements and curtailment of normal business operations," the bureau observed. "The projection of the current high rates of crude demand seems a justifiable precaution even if it results in a somewhat abnormal seasonal accumulation of stocks of certain refined products.

"With a substantial increase in demand indicated for the coming year, it is unlikely that stocks will prove excessive in terms of days' supply. An adequate current production of refined oils and the accumulation of stocks near consuming centers seems essential to insure that any disruption of transportation or refining may not hamper defense operations."

Stripped of its state break-down, as a result of assumption of allocations by OPC, the bureau's forecast showed that a daily average supply of 4,138,400 barrels of domestic oil will be required to meet January market demand, virtually the same as the December estimate, but 552,100 barrels higher than actual demand in January, 1941.

The bureau found that during the four weeks November 8 to December 6 daily average production was 4,155,000 barrels and total runs to stills 4,016,000 barrels. During the period, stocks of domestic crude increased at an average of 106,000 barrels daily, indicating a demand for domestic crude of 4,049,000 barrels.

Total demand for motor fuel in January is estimated at 52,900,000 barrels, an increase of 11.6 percent over actual demand a year ago.

Reviewing the stock position, the bureau found 82,303,000 barrels of finished and unfinished gasoline on hand October 31, while American Petroleum Institute statistics indicate an increase of about 2,500,000 barrels during November, which would bring the November 30 stocks to approximately 84,800,000 barrels.

However, it was pointed out, while this is about 5,300,000 barrels more than stocks on November 30, 1940, it represents a fewer number of days' supply. The bureau estimated that finished gasoline stocks will be increased by 7,800,000 barrels during the current month.

With benzol production and direct sales of natural gasoline estimated as 1,600,000 barrels, the indicated refinery production for January is 59,100,000 barrels, which the bureau distributed among the several refining districts, as follows:

East Coast, 7,310,000 barrels; Appalachian, 2,190,000 barrels; Indiana - Illinois, 12,650,000 barrels; Oklahoma, 2,950,000 barrels; Kansas - Missouri, 3,420,000 barrels; Inland Texas, 3,900,000 barrels; Texas Gulf Coast, 14,420,000 barrels; Louisiana Gulf Coast, 1,920,000 barrels; Inland Louisiana - Arkansas, 1,190,000 barrels; Rocky Mountain, 1,550,000 barrels; California, 7,600,000 barrels.

Natural gasoline to be blended at refineries is estimated at 7.25 percent of total refinery production, or 4,280,000 barrels. The yield of straight-run and cracked gasoline is estimated at 43.20 percent which, applied to the production of 54,820,000 barrels, gives crude runs of 126,890,000 barrels, or 4,093,200 barrels daily. The estimate for foreign crude runs to stills is 4,300,000 barrels.

With import and export figures suppressed by the Department of Commerce, the bureau made no estimate of possible exports, but said that crude for export and to be used as fuel and losses will approximate 5,700,000 barrels.

Aviation Gasoline

Materials to be used in the operation of a British refinery for aviation gasoline, location of which was designated only as being "in the Caribbean area," were assigned a high preference rating this week in a special order issued by OPM priorities division.

Anglo-American Purchasing Company, New York, was granted use of the rating to obtain a specified list of materials. Since the requirements of the refinery will include a large number of diverse items, a single order was issued giving priority rating for all of them, to avoid the necessity of handling many individual applications.

Toluene

All toluene in the United States will be put under allocation orders February 1, it was announced December 30 by the priorities division of OPM.

Every producer of the material will be required to file a report by January 15, and monthly thereafter, showing his estimated production and scheduled deliveries of commercial grade toluene for the following month, and no deliveries may be made after February 1 without authorization from the director of priorities, except that deliveries may be made according to the schedule as filed if no word to the contrary is received from OPM before the 25th of the month before which they are to be made.

Beginning February 1, also, it was ordered, at least 70 percent of the total production of all producers of toluene must be of nitration grade, meeting the requirements of Army specifications.

Under a preference rating list set up for civilian uses of toluene, medicinals and drugs are classified B-1 and petroleum additives B-2.

The order will apply to toluene from whatever source derived, except that it shall not include petroleum solvents and diluents of Kauri-butanol values less than 85 Kauri-butanol number.

Traffic

Railroad loadings of petroleum and its products in the first quarter of 1942 are expected by the carriers to be 7.2 percent greater than in the corresponding period last year, in estimates just compiled by the 13 shippers' advisory boards of the Association of American Railroads.

A total of not less than 525,686 carloads is expected to be offered for rail transportation during the next three months as compared with 490,258 carloads in the corresponding period in 1941.

A survey of the 28 most important commodities, in point of carloadings, shows that petroleum and its products is the fourth most important, being exceeded in tonnage only by coal and coke, iron and steel and lumber and forest products, and constituting about 8 percent of the total cars needed for the commodities listed.

Containers

Substitution of wooden barrels for steel drums in the export trade, standardization of containers, the use of glass and other substitutes for steel and copper containers and measuring devices and the imposition of heavy deposits on containers to insure their return for reuse were recommended this week by OPC.

Defense Efforts Push Oil to Record Levels During 1941

By WILLIAM R. BOYD, JR.
President, American Petroleum Institute

THE declaration of the existence of a state of war with the Axis powers found the American petroleum industry working at breakneck speed, with the thorough-going cooperation of the government, to meet new demands for petroleum products, and to eliminate bottlenecks before they have a chance to affect the supply of petroleum.

On the very day Congress was acting to meet the treacherous attack of Japan, Petroleum Coordinator Harold L. Ickes, with keen foresight and patriotic resolve, was organizing a Petroleum Industry Council for National Defense — a sort of partnership arrangement between the federal government and the petroleum industry, to have petroleum play its all-important part in prosecuting the war.

Demand for petroleum products in 1941 was by far the greatest in the 80-year history of the industry, amounting nearly to 1,600,000,000 barrels, or almost 10 percent above 1940. United States consumption alone increased more than 12 percent. At the end of the year the industry was producing crude petroleum at a rate of more than 4,100,000 barrels a day, with predictions made that rapidly mounting needs would require production of 4,500,000 barrels a day by the middle of 1942, and possibly of 5,000,000 barrels a day by July 1, 1943.

Crude Oil in Storage at End of Year

YEAR	Barrels
1937	306,826,000
1938	274,958,000
1939	239,978,000
1940	264,709,000
1941 (est.)	244,000,000

Crude Oil Run to Stills

YEAR	Barrels
1937	1,183,440,000
1938	1,165,015,000
1939	1,237,840,000
1940	1,294,162,000
1941 (est.)	1,406,976,000

Refined Products in Storage at End of Year

YEAR	Barrels
1937	259,164,000
1938	280,962,000
1939	285,860,000
1940	299,875,000
1941 (est.)	300,000,000

The petroleum industry, by its very nature, is so integrated from oil well to consumer that almost any operating change in one small part of the industry has its inevitable reaction in other branches of the industry thousands of miles away. Defense demands already have made many such changes imperative, and more will come.

In order that these changes might be made with complete fairness to all elements of the industry, and that the industry might make its maximum cooperative contribution to national defense without any hindrance because of possible illegality, the President on May 28 appointed Secretary of the Interior Harold L. Ickes as Petroleum Coordinator for National Defense. With the cooperation of the industry and of dozens of regional committees of oil men, he has prudently and effectively met the problems that so far have appeared, and actively is working closely in cooperation with the industry to assure completely adequate supplies of petroleum for all national defense needs in the future.

On December 1, 1941, this government-industry cooperation was put on a more formal basis with the appointment of a national Petroleum Industry Council for National Defense, charged by the Coordinator with advising him and

Production of Crude Petroleum
(In barrels of 42 U. S. gallons)

YEAR	United States	Rest of World	Total World
1937	1,279,160,000	762,878,000	2,042,038,000
1938	1,214,355,000	753,332,000	1,967,687,000
1939	1,264,962,000	811,810,000	2,076,772,000
1940	1,353,214,000	823,548,000	2,176,762,000
1941 (Estimated)	1,405,218,000	809,399,000	2,214,611,000

Wells Completed in the United States

YEAR	Oil	Gas	Dry	Total
1937	23,678	2,695	6,432	32,805
1938	19,286	2,066	6,141	27,493
1939	19,045	2,198	6,474	27,717
1940	21,072	2,352	6,617	30,041
1941 (Estimated)	21,584	2,869	6,846	31,299

Production of Crude Petroleum by States
(In barrels of 42 U. S. gallons)

STATE	1939	1940	1941 (Est.)
Arkansas	21,238,000	25,775,000	26,326,000
California	224,354,000	223,881,000	230,736,000
Colorado	1,404,000	1,626,000	1,860,000
Illinois	94,912,000	147,647,000	134,769,000
Indiana	1,711,000	4,978,000	6,536,000
Kansas	60,703,000	66,139,000	82,986,000
Kentucky	5,621,000	5,188,000	4,811,000
Louisiana	93,646,000	103,584,000	115,469,000
Michigan	23,462,000	19,753,000	16,324,000
Mississippi	107,000	4,400,000	15,547,000
Montana	5,960,000	6,728,000	7,504,000
Nebraska	2,000	276,000	1,713,000
New Mexico	37,637,000	39,129,000	39,521,000
New York	5,098,000	4,999,000	5,126,000
Ohio	3,156,000	3,159,000	3,284,000
Oklahoma	159,913,000	156,164,000	155,276,000
Pennsylvania	17,382,000	17,353,000	16,492,000
Texas	483,528,000	493,209,000	507,789,000
West Virginia	3,580,000	3,444,000	3,378,000
Wyoming	21,454,000	25,711,000	29,709,000
Other States*	94,000	71,000	62,000
Total United States	1,264,962,000	1,353,214,000	1,405,218,000

* Missouri, Tennessee, and Utah.

considering on its own motion matters relating to the coordination of the industry, and taking any action recommended by the Coordinator. The Council is composed of representative oil men from all branches of the industry.

During 1941 the industry was concerned with a number of potentially serious problems, among them the threat of a deficiency of petroleum supplies on the East Coast, huge additional demands for 100-octane super aviation motor fuel, reduced supplies of raw materials for the manufacture of tetraethyl lead, and the need for high priorities to assure the continuing normal operations of the industry.

To meet these and other national defense emergencies, the petroleum industry spent hundreds of thousands of dollars in new capital expenditures during 1941, for new refining equipment, new pipe lines, and new tankships, along with the regular capital expansion of the industry. Shipyards turned out many new high-speed tankships in record time during the year, and many others are being built or are on order for oil companies and the Maritime Commission, with completion scheduled for 1942 and 1943.

Two national defense pipe lines —a 250-mile crude oil line from Portland, Maine, to Montreal, Canada, and a 450-mile products line from Port St. Joe, Florida to Chattanooga, Tennessee — were completed before the end of the year, and a third products line, 1260 miles long, from Baton Rouge, Louisiana to Greensboro, North Carolina, is nearing completion.

Foreign Trade in U. S. Crude Petroleum
(In barrels of 42 gallons)

YEAR	Imports	Exports
1937	27,484,000	67,234,000
1938	26,412,000	77,254,000
1939	33,095,000	72,076,000
1940	42,662,000	51,496,000
1941 (est.)	49,834,000	35,500,000

Foreign Trade in Refined Petroleum Products
(In barrels of 42 gallons)

YEAR	Exports	Imports
1937	105,600,000	29,673,000
1938	116,474,000	27,896,000
1939	116,883,000	25,965,000
1940	78,970,000	41,089,000
1941 (est.)	70,409,000	43,715,000

Capacity of American refineries to produce 100-octane aviation motor fuel increased to nearly 44,000 barrels daily (50,000 barrels or 2,100,000 gallons with a greater proportion of tetraethyl lead) by the end of 1941, and plans sponsored by the Petroleum Coordinator call for quadrupling this huge capacity within the earliest possible time. The present capacity for this one grade of aviation fuel alone is far greater than the total capacity of the rest of the world combined, and is seven and one-half times the U. S. consumption of all grades of aviation fuel as recently as 1938.

All the agencies of the federal government having to do with petroleum and petroleum product production and transportation are busily engaged in working out cooperatively with the industry every problem as it arises. The Office of Petroleum Coordinator for National Defense is functioning with great intelligence and effectiveness. The state regulatory agencies and the Interstate Oil Compact Commission are geared into the program. And the petroleum industry and all its units are going to do a magnificent job!

Record Levels in 1941

The detailed 1941 figures covering the operations of the petroleum industry, estimated for the most part by the Institute, reveal that practically every figure is a new all-time high record. Crude oil production in the United States totaled 1,405,218,000 barrels, compared with 1,353,214,000 barrels in 1940, but production in the rest of the world is believed to have declined slightly to 809,399,000 from 823,548,000 barrels in 1940. The U. S. proportion of the world total therefore increased slightly to 63.5 percent.

U. S. consumption of petroleum and products rose nearly 12 percent to an estimated 1,478,697,000 barrels, but exports dropped again to 105,909,000 barrels to make total demand 1,584,606,000 barrels. Stocks of crude petroleum were reduced about 20,000,000 barrels during the year, ending at 244,000,000 barrels, but stocks of refined products on December 31, 300,000,000 barrels, were virtually equal to the January 1, 1941, stocks.

Drilling of wells increased slight-

[*Continued on page 42*]

Demand for Crude Oil and Refined Products
(In barrels of 42 gallons)

YEAR	Domestic	Export	Total
1937	1,169,682,000	172,834,000	1,342,516,000
1938	1,137,123,000	193,728,000	1,330,851,000
1939	1,231,076,000	188,959,000	1,420,035,000
1940	1,326,620,000	130,466,000	1,457,086,000
1941 (Estimated)	1,478,697,000	105,909,000	1,584,606,000

Demand for Residual Fuel Oil
(In barrels of 42 gallons)

YEAR	Domestic	Export	Total
1937	325,514,000	15,304,000	340,818,000
1938	290,065,000	17,920,000	307,985,000
1939	323,488,000	17,485,000	340,973,000
1940	340,163,000	16,109,000	356,272,000
1941 (Estimated)	381,000,000	14,527,000	395,527,000

Demand for Distillate Fuel Oil
(In barrels of 42 gallons)

YEAR	Domestic	Export	Total
1937	116,841,000	30,129,000	146,970,000
1938	117,449,000	29,641,000	147,090,000
1939	134,973,000	32,020,000	166,993,000
1940	160,851,000	19,140,000	179,991,000
1941 (Estimated)	172,213,000	16,300,000	188,513,000

Demand for Kerosine
(In barrels of 42 gallons)

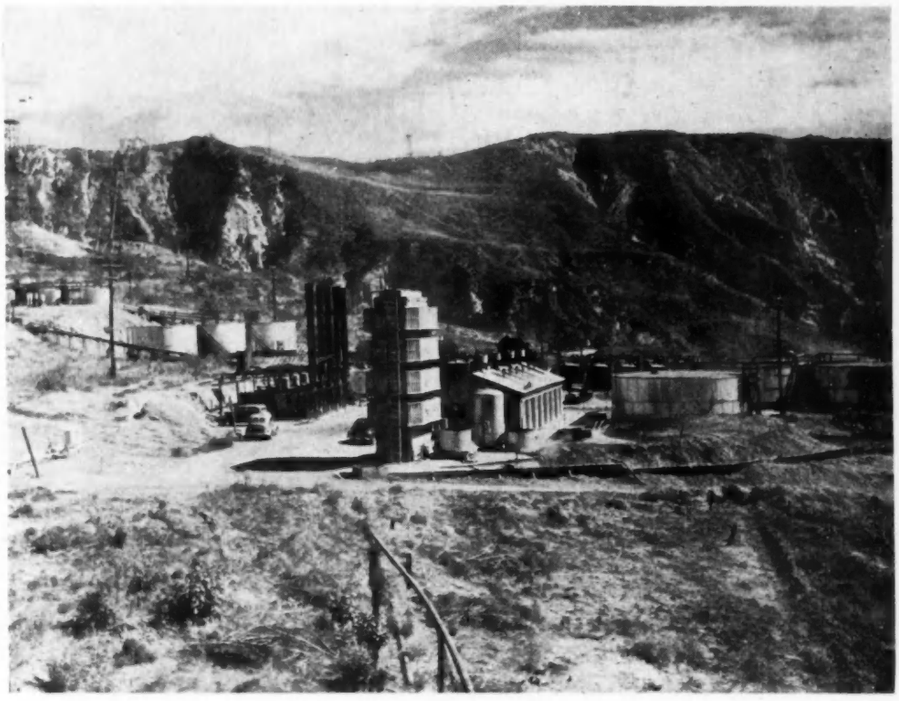
YEAR	Domestic	Export	Total
1937	54,972,000	8,886,000	63,858,000
1938	56,360,000	7,504,000	63,864,000
1939	60,503,000	8,241,000	68,744,000
1940	68,776,000	3,374,000	72,150,000
1941 (Estimated)	68,888,000	2,512,000	71,400,000

Demand for Motor Fuel
(In barrels of 42 gallons)

YEAR	Domestic	Export	Total
1937	519,352,000	38,306,000	557,658,000
1938	523,003,000	50,109,000	573,112,000
1939	555,509,000	44,638,000	600,147,000
1940	589,400,000	25,377,000	614,777,000
1941 (Estimated)	660,273,000	23,570,000	683,843,000

Demand for Lubricating Oil
(In barrels of 42 gallons)

YEAR	Domestic	Export	Total
1937	23,323,000	10,975,000	34,298,000
1938	21,233,000	9,417,000	30,650,000
1939	23,713,000	11,881,000	35,594,000
1940	24,690,000	10,461,000	35,151,000
1941 (Estimated)	32,000,000	9,500,000	41,500,000



General view of plant and cooling tower. Plant was located beside the existing facilities of a field dehydrating unit where clean, hot power oil was obtainable at slight additional cost.

Widely Spaced and Varying Depth Wells Pumped Efficiently by Large

Centralized Hydraulic Plant

By GILBERT M. WILSON, Staff Writer

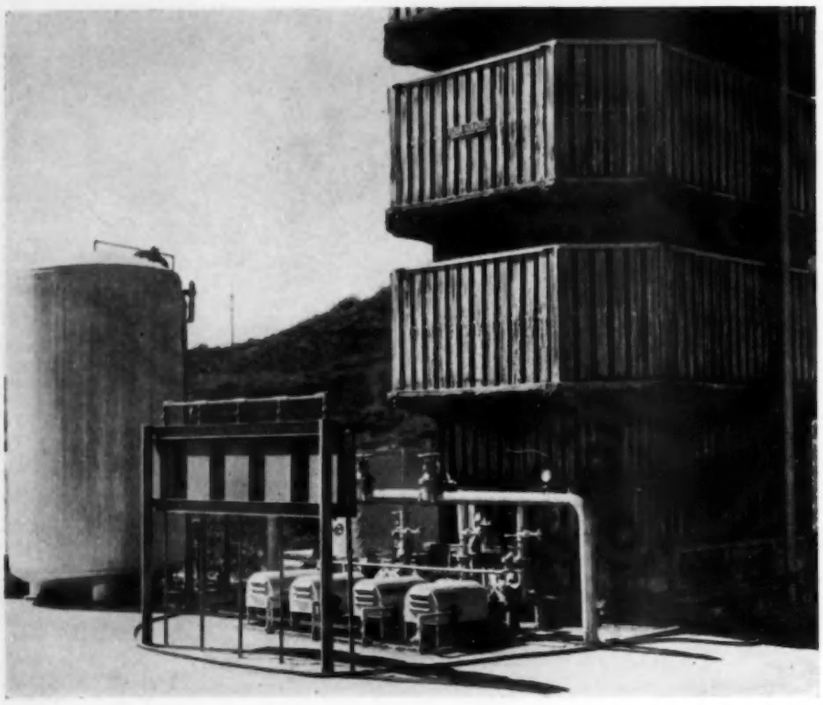
EFFICIENT and economical hydraulic pumping of ten widely spaced wells of Tide Water Associated Oil Company in the Ventura Avenue field of California, is being accomplished from a central plant housing six individual triplex units. Several distinct advantages are being realized through this, one of the largest installations of this type under a single roof. Chief among these are simplified operation and maintenance of the units, and economy in being situated near one of the field dehydrating units from which hot power oil can be obtained.

The ten wells operated by this central power plant had been on gas lift and ordinary rod pumps until two years ago, when it was decided to equip them with hydraulic pumps. The pumps in four of the wells are set at 4500 feet, four at 6000 feet and two at 6500 feet. They are located in the fairly precipitous terrain characteristic of this portion of the field. The well most remote from the plant is more than 2500 feet.

The well lighted and ventilated plant building is located somewhat below the level of the wells and near the lease dehydrating and shipping tanks, so full advantage is taken of the treating plant from which clean, emulsion-free hot crude oil is obtained for use as power oil.

Each of the six triplex pumping units is powered with a 50-horsepower multi-cylinder engine, and the entire assembly is mounted as a complete unit on an I-beam skid base bolted to the concrete floor. Running the full length of the building at the triplex end of the units, is a grating-covered cement-lined trough through which run the trunk lines of the power-oil intake, power-oil discharge, gas-fuel line for the engines, and the intake and discharge of the engine circulating water. Each engine exhausts through a vertical stack to a muffler on the roof. Ample floor space surrounds each unit so that it can be serviced without having to interfere with neighboring units.

All the units are connected to a single outside cooling tower, making it possible to close the building tightly during heavy rain storms or other bad weather. The 25-foot high, 12-by-12-by-20 cooling tower has ample cooling capacity for the units. At the base of the tower are four 2-inch, 60-gallons-per-minute-capacity electric circulating pumps. Two of them circulate all the water through the units; one is a stand-by, and the other circulates water through the tower itself. A water-softening unit is used in connection with the tower, which helps



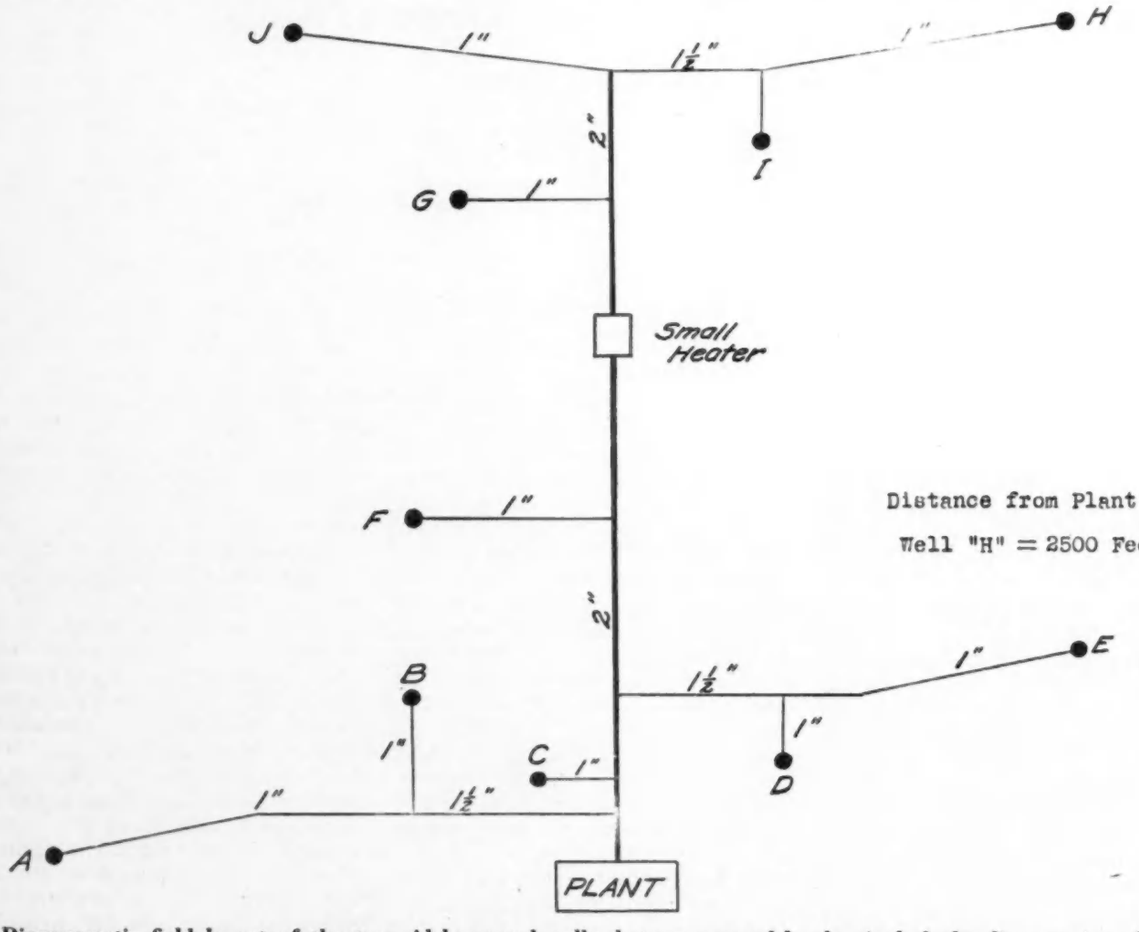
Two of the four 2-inch, 60 gallons per minute capacity electric centrifugal pumps circulate water through all of the engines driving the power units; one is a standby unit; and the other circulates water through the tower itself. A water-softening unit reduces scale troubles.

to cut scale troubles to a minimum.

The engines are started by storage-battery starter that can be wheeled up and connected to any unit. A small charging unit, kept in one end of the building, keeps the batteries at full charge.

Before entering the intake line serving the triplex units, the heated power oil, coming from the dehydrator plant, is run through a trap. Here, any vapor is removed from the oil so that only dead oil enters the pumps. The fluid level is automatically maintained at a certain level in this trap. A pressure of 15 pounds, just enough to charge the pumps, is held on the intake line.

The 2-inch trunk line coming out of the plant extends up hill and approximately bisects the area taken



Diagrammatic field layout of the ten widely spaced wells that are pumped by the single hydraulic pumping plant. Extremely rugged terrain and convenient proximity of field dehydrating unit, made it more advantageous to locate plant at indicated position. Figures denote size of power oil pipe that serves each well.

in by the wells. The single pump pressure of 3000 pounds is held on this line. From this main line, laterals take off to serve the various wells. Not more than two wells are served on each lateral. When a single lateral takes off to one well, 1-inch pipe is used. When two wells are served from one lateral, 1½-inch pipe goes to one well with the second well operated through a 1-inch pipe extension. The pipe is high-pressure seamless, galvanized inside and out. All lines are buried.

The power oil leaves the plant at 140° F. in order to keep the paraffin in solution through all the power-oil and lead lines. Because the last four wells are so far from the plant, it was necessary to install a small auxiliary heater in the main line in order to reheat the oil to the point it had when leaving from the plant. Paraffin is one of the major production problems in this field, but since the installation of the hydraulic pumps and subsequent use of hot oil in all lead lines and well strings, this problem has been reduced considerably.

The plant is operating at only about 70 percent of its rated capacity, it being possible to connect three more wells without materially changing the existing set-up.

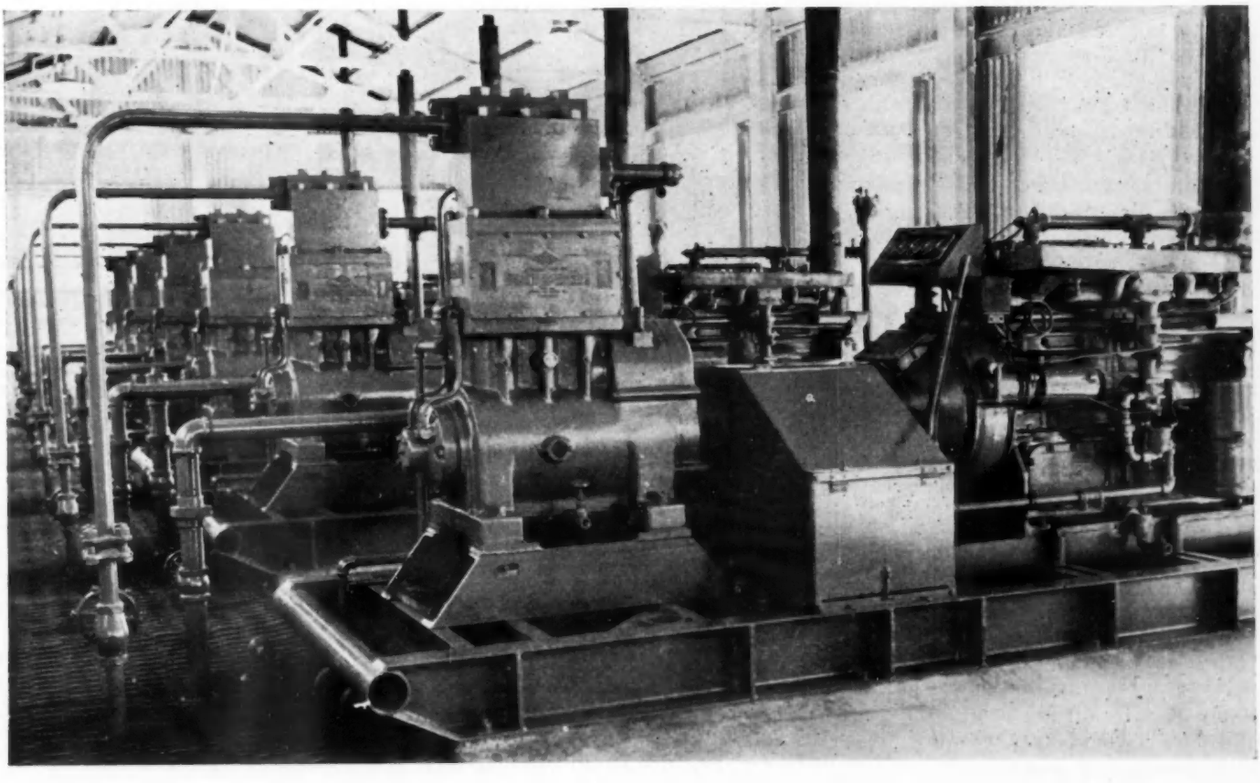
These wells are equipped with 3- and 2½-inch tubing, and 2½-inch hydraulic pumps are used in all wells. The 2½-inch, for instance, (nominal size) pump normally has a plunger size of 1¼-inch on both the power and production end, and therefore a plunger area ratio of power end to production end of 1:1.

However, in the four shallow wells, having 4500-foot pump settings, the power end of the plungers is 1¼-inch, while the production end is 1-7/16-inch. This inverted ratio is necessary to compensate for the shallower depth, and the consequent lower triplex pressure that would have been required to pump the oil from that shallower depth. This allows all the wells to operate smoothly at the single triplex plant pressure of 3000 pounds required by the wells having the deeper pump settings.

Currently each well is averaging 125 barrels per day, although they have produced as high as 270 barrels. In order to obtain 1700 barrels per day it was necessary to handle 4400 barrels of gross fluid, of which 2700 were power oil. The gravity of the oil averages 29.5, and the average water cut of the wells is less than 5 percent.

Power oil is regulated by means of a flow bean with a pressure gauge located at each well. A power oil meter connected into the line near each derrick records the power fluid that enters the well.

The present plant has been in operation for nearly two years, and during that time very satisfactory lifting costs have been realized. Several factors contribute toward the low operating costs. Foremost, is the close proximity of the dehydrating plant, which makes it unnecessary to operate a separate power-oil heater, outside of the present small auxiliary unit farther out on the man line. Pulling jobs have been infrequent, the average since the wells were put on the plant, being something over a year between jobs on each well. Maintenance costs of the individual units likewise have been low. As outlined above, the power units are housed under a single roof, which facilitates servicing. Individual units may be removed with little difficulty, and without shutting the wells down. Considerable time is saved by the pumper by being able to service all the units at one stop, as the widely scattered wells, if individual units had been installed on each, would have required a great deal more time to service and inspect on each tour. The laying of several thousand feet of dry-gas fuel lines also is saved by having the pumping units in one convenient centralized location.



Interior view of centralized hydraulic pumping plant. Each unit is mounted on a skid base. The unitized trunk lines of power oil intake and discharge, fuel and cooling water lines run the full length of the building beneath the floor grating.

Advanced Procedure in

Joint-Interest Billing

By Special Committee of Petroleum Accountants Society of Oklahoma

ACCOUNTING practices in the last decade of the petroleum industry have witnessed improvements no less important than advancements in equipment and operating procedure. Particular progress has been made in joint-interest billing —a department of petroleum accounting that is becoming of increasing importance in view of modern operation complexities. Forms and methods of past years must now be looked upon as haphazard. Some statements of the past, if rendered today, would be returned to the operator for lack of information sufficient for proper handling.

Progress made in recent years has eliminated many objections to former procedure. A new basis for joint-interest billing has been evolved but there remain some points that should be given consideration to further improve this department of petroleum accounting.

There are variations in any exact schedule of accounting, these sometimes developing from the structure of a particular firm, from a phase of allowances; as in the case of a company allowing cash discounts or recording same as financial income, etc., to suggest a general rather than a specific application of improvements. Consequently, it is a decided inconvenience for those companies maintaining cash discounts as financial income, never entering into operating accounts, to state the discounts as part of the invoice cost. Likewise, there are some companies that pass credit for discounts of this sort only when the non-operator pays the costs and charges within the time limits prescribed by contract. These facts make it difficult to recommend a standard form for presenting the information and it should be borne in mind that suggestions made are applicable in a majority, but not in all, instances.

In formulation of procedure and suggestions for improvement of present methods, billings rendered by many companies operating in the Mid-Continent representing large and small firms, with limited joint operations were reviewed and analyzed. In suggesting revised or improved procedure consideration was given facilities available to the operator for the preparation of billing.

With these factors taken into account and evaluated, two forms of billing can be recommended, being:

1. That for the operator whose joint operations are not extensive and whose organization is constructed more or less on a small scale.

2. That for the larger companies having facilities necessary for the preparation of a suitable form of billing.

The operator whose operations are not extensive and whose organization is limited in size because of the character and size of its operation, must of necessity render billings in the most expeditious manner.

This explains rendering of billings by some companies with copies of vendor's invoices attached or by attachment of copies of invoices prepared on special forms. If this form of billing is rendered it should be prepared in an orderly manner on paper consistent in size with invoices customarily rendered by vendors. Also, a recapitulation should accompany, showing voucher reference, description of detail supporting; that is, vendor's name and the amount tabulated in gross amounts with footings showing total amount. Further, the recapitulation should show each joint owner's proportion of the total gross charges shown. Individual recapitulation statements should be prepared for each lease of facility account involved, and invoice should be rendered showing the net amount for each such lease of facility for which charge is made. Recapitulation can well be restricted to summarization of detail supporting invoices and should not be prepared in such manner that part of recapitulation represents detail billing and part truly a recapitulation.

In all cases invoice attachments should leave space for non-operator's account distribution, and on each such invoice information should be added by the operator that will enable the non-operator to determine the propriety of charges. Frequently copies of invoices pertain in part to operations of the operator and when included as a part of joint billings the amount applicable thereto should be clearly indicated.

The larger companies are logically expected to set the example in rendition of joint-interest billings because they are better equipped with mechanical-bookkeeping equipment, and the extent of their joint interest operations constitute a large percentage of all joint operations, both in the number of units operated and in the extent of joint operations.

In the review of billings rendered by a large number of concerns it is the consensus of opinion that the present form of billing used by several of the larger companies operating in the Mid-Continent were the best examples to follow as a pattern. Most of the forms used are especially printed, prepared by ditto process on 8½ x 14-inch ditto paper. Equally as suitable is the continuous form used by several

This Simple Test Shows Why the CONCAVE SIDE Cuts Belt Costs!

What Happens When a V-Belt Bends

FIG. 1

FIG. 2

If you care about belt costs, pick up any V-belt you have handy and make this simple test:—

Bend the V-belt while you grip its sides and you will feel how the belt changes shape. The top, under tension, narrows. The bottom widens. The sides of the belt bulge out. Clearly, if its sides were straight to begin with, the bent belt is forced into a shape that does not fit the sheave groove—as shown in figure 1, on the left.

Now, bend a V-belt built with the patented Concave side. You get the same shape change, but now the new shape exactly fits the sheave groove—as shown in figure 2. There is no side-bulge. Results? (1) Uniform side-wall wear—longer life! (2) The belt gets a full side-width grip on the pulley—carries heavier loads without slippage. This cuts belt costs and saves power.

Only belts built by Gates are built with the Concave side, which is a Gates patent.

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operators, prepared on typewriter with carbon copies by use of fanfold or interleafed carbon arrangement.

The size, grade, and weight of paper does not offer any problems to the non-operator so long as maximum standard sizes are not exceeded and so long as the grade of paper used is sufficient to insure a record for a reasonable period.

The most important features of presenting a joint interest billing lies in its presentation, the order and arrangement of the pertinent data included, and the standard of accuracy set by the operator in preparation.

Invoice should be rendered for each joint-interest billing showing the non-operator's proportion of charges for each lease and facility account included in the joint-interest billing. If credits for oil and gas sales are included, distinction should be made for each, and appropriate supporting statements should be attached showing the customary detail. Operators should refrain from including other information on the invoices. Since joint-interest billings are rendered 25 to 30 days after the end of the month and since payments for such are usually made within 10 days after receipt, it frequently happens that the non-operator pays for an invoice after the close of the operator's cash book for the month, and since the operator renders his invoice to the end of the accounting month, payments received after the first of the month are not entered on the operator's statement. It is recommended that when invoices are rendered purporting to show balances carried forward from the previous month that the operator indicate interim payments by appropriate notation of such on the invoice rendered.

Supporting each item comprising lease of facility accounts listed on the invoice should be an operating statement showing in detail the costs and charges assessed against each lease or facility. These statements should show in each instance gross charges to the operation, with appropriate tabulation of the various charges, and finally the aggregate gross charges for the period covered. The gross amount should be further distributed to show each joint owner's proportion of the gross charges as well as the percentage of interest owned.

The arrangement of detail on the operating statement should be in the order in which the various subjects are discussed hereinafter. Operators should consider spacing information included on operating statement in such manner that will enable non-operator to insert accounting distribution between items detailed, that is, between invoices, between transfers, between the detail of labor for each employe, etc. While this suggestion may on its face seem unimportant it must be remembered that paper is cheap while a little inconvenience to labor may be very costly.

First — Invoices covering purchases made by the operator for use on and benefit of the joint account. The information which should be shown is the name of the vendor, invoice number and date, point of origin, date material was received, or date service was rendered, use for which material was purchased or service performed. The description of material furnished should be complete including price, trade discount, value, and cash discount, if any. It is suggested that in describing the use of the material that sufficient information be shown to enable the non-operator to determine the exact purpose for which the material was purchased. Invoices covering services, such as telephone bills, water, electricity, trucking, etc., should be invoiced in sufficient detail to enable the non-operator to properly check and verify the propriety of the charges.

There has been considerable discussion concerning the necessity for associating, by cross reference, charges for purchases of material usually considered controllable representing replacement of equipment either junked or moved off the property. The opinion has been expressed that this pertinent information should be furnished if it is convenient for the operator, otherwise, it is a matter that should be disposed of by agreement between the operator and non-operator.

Second—Payrolls should reflect the period for which the payroll covers. In all cases the employe's name and occupation and rate of pay should be shown. The description of work performed will depend largely upon the occupation of the employe for which charge is made; these occupations may be divided into three broad classifications:

1. Monthly-paid employes whose time is ordinarily allocated to the properties served on some equitable basis, that is, wells, labor, etc.

2. Hourly-paid employes whose individual classification is indicative of the character of work customarily performed.

3. Hourly-paid employes whose individual classification is not indicative of the character of work ordinarily performed.

In the case of the classification first mentioned above, it is believed that the title classification is sufficient and the fraction used to apportion charges for such should be clearly indicative of the basis used.

In the case of the classification mentioned second above, the description of work performed, such as pumping, drilling well 1, cleaning out well 8, driving truck No. 600, should be stated together with the total time, the rate, and the amount earned for each location.

In the case last mentioned above, detail description of work performed should be shown for each job or for each character of work for each location as well as the amount of time engaged on each, the rate of pay and the amount earned for each.

It has been suggested that in describing the work performed sufficient information be shown to enable the non-operator to associate labor charges to cost estimates on new work when such estimates are prepared and furnished to the non-operator. While it has been a practice of some companies to show dates on which various payroll charges were incurred it is the opinion of many that in most cases it would be sufficient to show only the number of hours applicable to each character of work that was performed. It might be argued that it is desirable from the viewpoint of the non-operator as it would enable the non-operator to associate labor charges with usage charges for pulling tools, drilling and cleanout tools, and other similar items of equipment for which it is customary to make usage charges. On the other hand it is a decided burden on some operators to furnish that information for all of its joint operations. It is therefore concluded that this matter should be arranged between the operator and the non-operator as to whether or not payroll information would be shown by dates the service was performed, or make special request for special analysis when labor charges for any particular job or operation is desired.

Third—Where possible the operator should invoice social security taxes immediately following the payroll information and preferable in the month to which such so-

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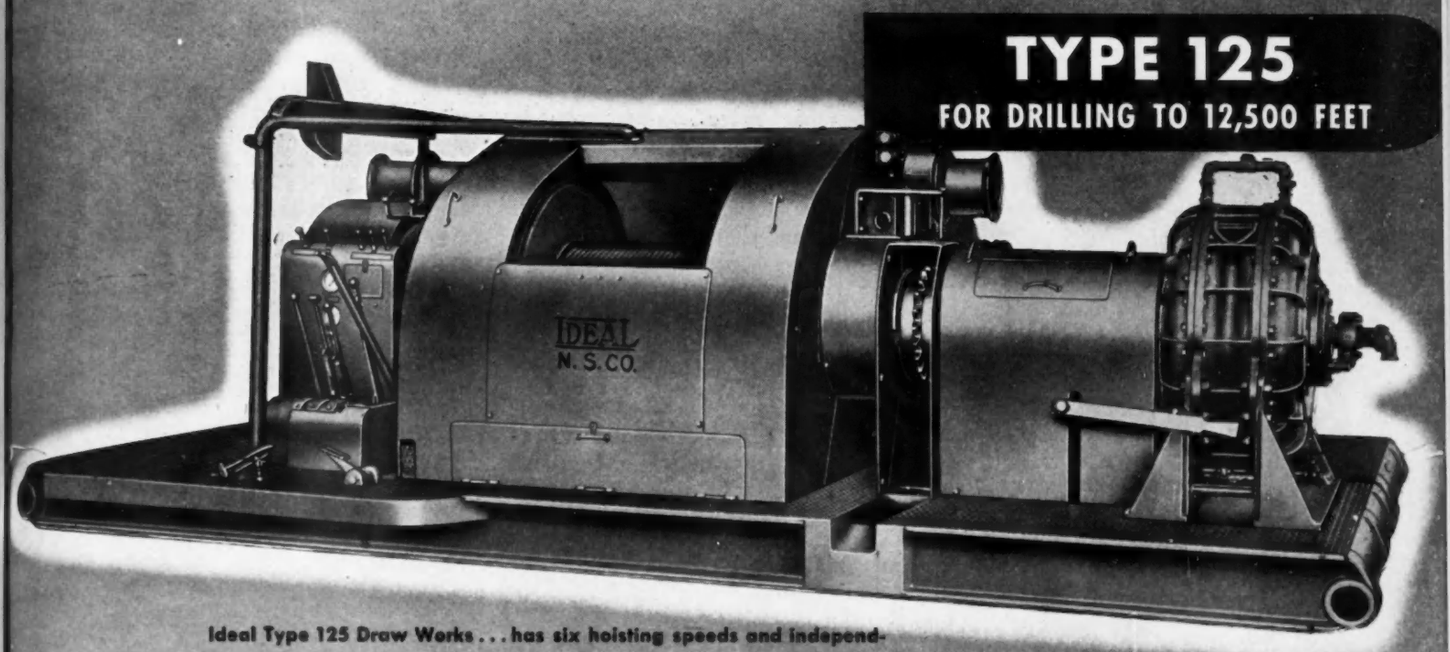

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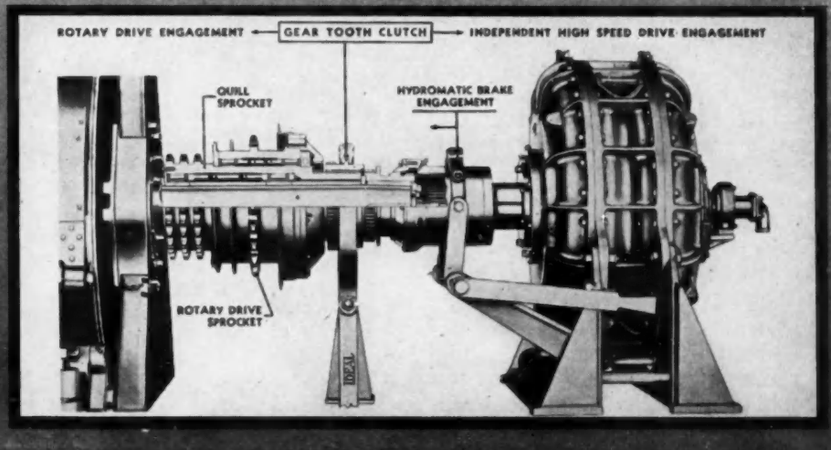

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cial security taxes are applicable. Should the operator's accounting procedure make it impossible to include these taxes in the same month in which the payroll charges are made sufficient reference should be furnished to enable verification.

Fourth—Material transfer charges should be segregated, first as to charges originating from operator's fully-owned accounts or accounts foreign to the property being charged; and secondly, as to charges from jointly owned properties involving the same interest as the property being charged. This segregation makes for ease in determining propriety of handling charges, association of sales and use taxes, and for elimination of operators' values when non-operator desires to use his own values in transfer of material between joint interest properties of the same interest. The information to be shown when recording material transfer transaction is as follows:

1. Date and number of transfer.

2. From: Name of warehouse, lease (including well number if applicable), or account from which material is moved.

To: Name of warehouse, lease (including well number if applicable) or account to which material is moved.

3. Was Used For: For material credited to joint account furnish brief statement indicating what the material was used for on the joint lease or facility and, if possible, state reason for removal.

4. To Be Used For: For material charged to joint account furnish brief statement indicating what the material will be used for and reason for installation.

5. Description: Show catalogue description of material, abbreviating where necessary.

6. Conditions: Show condition classification as "A," "B," "C," "D" and "E." Particular attention should be given to recording of junk transactions on joint interest billings so that non-operator's records are in agreement with operator's records.

7. Price: Show replacement cost price extended to reflect condition value.

8. Handling Charges: Show warehouse handling charges applicable to each warehouse transaction.

9. Sales and Use Taxes: Show and use taxes separately and in sufficient detail to enable operator to apportion such to applicable material transactions if it is so desired.

Fifth—Charges for facilities should in every case describe the service that is being furnished and the time and rate that such service was furnished. The following should be used as a guide in determining the information that should be shown with respect to charges for facilities:

Water, Fuel, and Power: Company facility name furnishing such service, purpose for which such service was furnished, including detail such as number and size of boilers, engines, etc., and amount furnished, that is, barrels, either actual or estimated, cubic feet, actual or estimated, KWH, hours, days, etc., the applicable rate and the amount thereof.

Cleaning Out Tools and Drilling Tools: For cleaning out jobs on which operator's tools are used the information furnished should include the company tool number, that is, string number or other name that would properly identify the unit furnishing such service and, if less than a complete string of tools, sufficient detail of equipment used to enable non-operator to determine the propriety of the rate used. In all cases the well number on which such work was done, the applicable rate, that is, rate per hour, per tour, or per day, and the amount charged therefor, should be shown.

Transportation Facilities: For trucks and tractors (excluding pickup trucks) show make and company number, whether with or without driver, size of unit (if rate for such is not in accordance with P.M.T.A. schedule), classification (if on Petroleum Motor Transport Association schedule), date work was performed, description of work performed or material hauled, number of hours if on hourly rate, number of miles if on mileage basis, or number of pounds if on rate per ton, and the amount charged therefor. When truck of a capacity greater than that needed show size or classification and rate applicable for size or classification of unit ordinarily used for such work. Equalizations of hauling charges, when made, should clearly indicate that such have been made and the basis therefor. In this connection it is observed that a few of the operators are following rates adopted by the Petroleum Motor Transport Association while others continue the practice followed in years past.

For automobiles (including pickup trucks) show custodian's name, car number, make of unit, time in use, that is, hours, days or miles driven, rate, and amount. Operators are cautioned to see that the proportionate part of automobile time for which charge is made is in agreement with proportion of labor charged. Charges for usage of personal cars should show approximately the same information as that for fully-owned automobiles.

For pulling units show size and make of unit, date work was performed, description of work performed, including well number, time in service, rate and amount charged therefor.

Sixth—Miscellaneous costs and charges such as administrative overhead charges, proratas of camp expenses, district office and superintendence expense, small tools, proration and pollution assessments, insurance premiums, ad valorem taxes, and other miscellaneous lease or facility charges, should be detailed in such manner as to properly state the nature of the charge and the basis on which such is apportioned to the operation. In connection with charges for camp expense and district office and superintendence expense it is suggested that non-operators refrain from requiring detail supporting such in monthly operating statements and that requests for special statements be directed to operators when the amounts charged therefor are not commensurate with other costs included in operating statements.

In conclusion, charges appearing on joint interest billings should be limited to direct charges applicable to the development and operation of the leased properties and that charges other than these should be made direct through medium of separate invoice. This will include invoices for recording fees, delay rentals, title and curative expenses, and many other miscellaneous charges.

In this paper it has been the intent to limit the presentation of matter to the preparation and rendition of joint-interest billings, and it was not the desire that anything herein be construed as an interpretation of any section or subsection of the uniform accounting exhibit adopted by the Mid-Continent Oil & Gas Association, nor that the suggestions as to form or data to be included in operating statements be construed as the requirements of any company or individual employing any of those engaged in this investigation and analysis.

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Molecular Explanation of

Retrograde Condensation

By RALPH F. NIELSEN, Department of Petroleum and Natural Gas Engineering,
School of Mineral Industries, The Pennsylvania State College

THE phenomena of retrograde condensation and its reverse, retrograde vaporization, are now well known to the petroleum production engineer. The fact that liquid may be produced by isothermal expansion of a multicomponent gas mixture at high pressure is known from the study of the behavior of the mixture produced from a "condensate" field. Conversely, it is known that by recompressing the same mixture (isothermally) the liquid phase is made to disappear into the gas phase. The related phenomena, isobaric retrograde condensation and vaporization (by raising and lowering the temperature, respectively, at constant pressure) are not of any immediate importance in production practice.

While these retrograde processes have only recently come into importance in petroleum production, they have been known for about 50 years. The process was observed and named "retrograde condensation" by Kuenen[1] in 1893. It was also predicted from van der Waals' theory for binary mixtures.[2] Physical chemists have since studied many binary mixtures in the critical range, including the range in which retrograde condensation occurs. Steam engineers were confronted with the phenomenon some 15 years ago in connection with the Benson boiler, designed to operate with steam above the critical temperature and pressure. Some salts present in the feedwater remained in solution above the critical point and were precipitated during expansion of the steam in the turbine, causing erosion of the blades. It is strange that even mention of retrograde condensation is absent from practically every well known text and treatise on physical chemistry.

The large amount of excellent work on the phase behavior of hydrocarbons is too well known to need mention here. Many articles have also appeared in the last few years on the discussion of retrograde processes as related to the phase boundary diagrams for various mixtures. To the average person, however, some kind of physical picture, which he can associate with phenomena already known to him, is a great help in understanding this seeming anomaly. While phase diagrams correlate the experimental facts, they do not explain why a retrograde region, as shown by the curves, is in accord with what we otherwise know or assume regarding the behavior of matter.

The most logical way of picturing why the process occurs is to consider the behavior of the individual molecules. It is conceded as a fact that there are certain attractive forces between molecules. The molecular explanation of retrograde condensation is based on such forces.

Before proceeding with the theory, let us briefly review the facts for a two-component case, the ethane-heptane system. In the accompanying graph, the pressure-composition curve at 200° F. has been plotted from the data of Kay.[3] Suppose we had a mixture containing 95 mol-percent ethane and heptane at 1200 pounds. This corresponds to point M on the graph, and it is seen that it must be all in one phase. If the pressure is reduced, liquid of composition denoted by O will begin to condense as soon as point N is reached, that is, 1030 pounds. That condensation must occur follows from the negative slope of NP, as may be shown by a material balance. Condensation will continue with reduction of pressure, the compositions following corresponding points along the curves, until P is reached at 700 pounds, when the amount of liquid is a maximum. With further reduction of pressure the amount of liquid decreases, at 400 pounds, point R, evaporation is complete. If the pressure is still further reduced, the vapor simply expands. Thus, we have retrograde condensation, followed by ordinary vaporization, during the isothermal expansion. If the expanded mixture were recompressed, condensation would occur up to 700 pounds, then retrograde vaporization from 700 pounds to 1030 pounds. That is, from 700 pounds to 1030 pounds vaporization is produced by increase of pressure at constant temperature. A material balance based on the curve would show that 26 percent of the heptane is in the liquid phase at 700 pounds.

As stated above, the explanation involves the assumption of attractive forces between molecules. These forces govern the phase behavior of a system. In the case of non-polar substances, like hydrocarbons, the forces are entirely "van der Waals' forces," so-called because of their relation to the term a/V^2 in van der Waals' equation of state, $(P + a/V^2)(V - b) = nRT$. In this equation, a and b are constants for a given gas, n is the number of mols, and P, V, R and T have the usual significance.

Although van der Waals' equation does not hold quantitatively at high pressures, it presents a simple explanation of the behavior of a gas. The term b is subtracted from the volume to allow for the space

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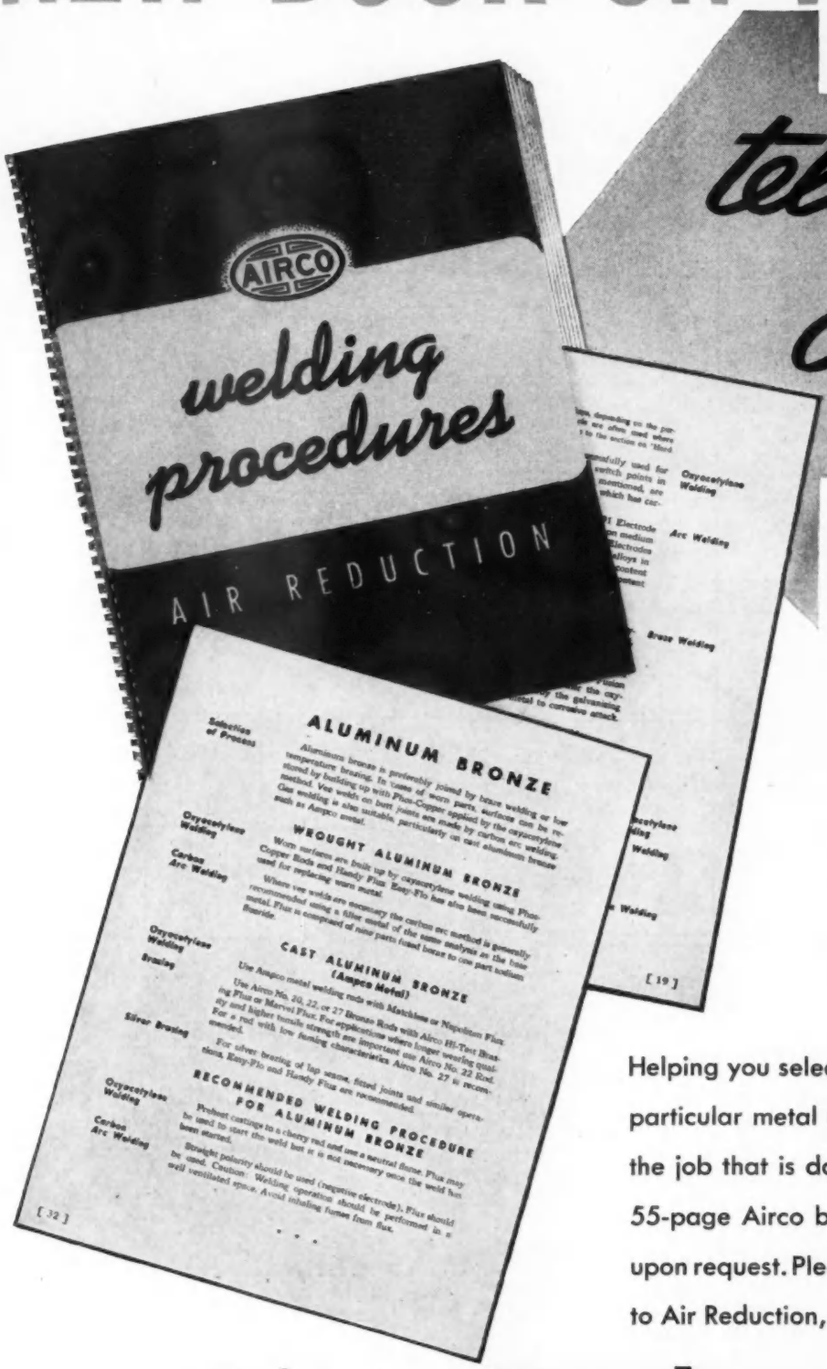

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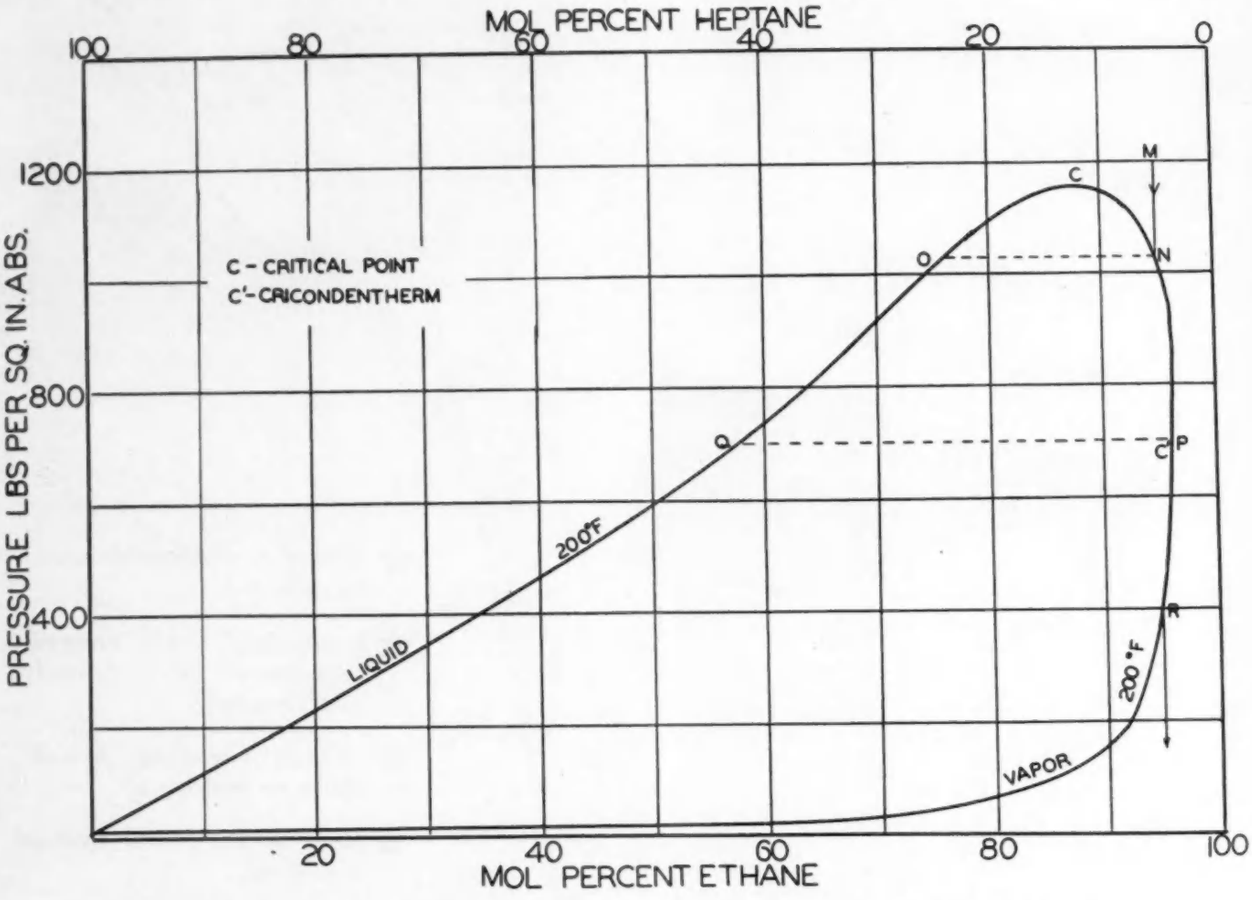
occupied by the molecules themselves. That is, V — b is the net space available for molecular motion. The term a/V^2 is often called the "internal pressure," since it is a correction applied to the pressure due to the attraction between molecules. It is added to the pressure, since attraction between molecules acts in the same way as external pressure, to reduce the volume. While a/V^2 measures the effect on the total pressure, a is a measure of the attraction of the individual molecules for each other at a given distance apart.



Pressure-composition curve at 200° F. for the ethane-n-heptane system, from the data of Kay[3]

It is these forces which make a liquid surface act like an elastic membrane, on account of the one-sided attraction on the molecules in the surface. While the "van der Waals' forces" tend to pull molecules together into the liquid state, the molecular motion (kinetic energy) associated with a given temperature tends to pull them apart. Under conditions where liquid and vapor can co-exist, these opposing factors are balanced so that part of the substance is in each phase. When the temperature is above the critical, the attractive forces cannot maintain a liquid phase on account of the higher kinetic energies associated with the higher temperature. At pressures below the vapor pressure of the liquid, the attractive forces become lessened by the greater distance between molecules, so the liquid phase again cannot exist.

It is these same attractive forces that cause one substance to be soluble in another; in other words, that pull molecules into a given phase. There is an attraction between all molecules of a similar type, both between those of the same and those of different sizes. The attraction depends on the size, as shown by tables of values for a for a series of paraffin hydrocarbons. The smaller the molecular attraction, the more volatile the substance. This is shown by the following table of van der Waals' a, for pressure in atmospheres and V = 1 at 0° C. and one atmosphere:

Gas	a
Methane	.0045
Ethane	.0107
Propane	.017
n-Butane	.029
n-Pentane	.038
n-Hexane	.049

While the normal processes of vaporization and condensation are associated relatively more with the attraction of the heavier molecules for each other, the retrograde processes are associated with the attraction between the light and the heavy molecules. The former type of attraction tends to pull molecules into the liquid phase and the latter to pull the heavier molecules into the gaseous phase, when the gaseous phase is sufficiently dense. Consider the reverse of the process previously described for a mixture of ethane and heptane. If we start with all gas at a low

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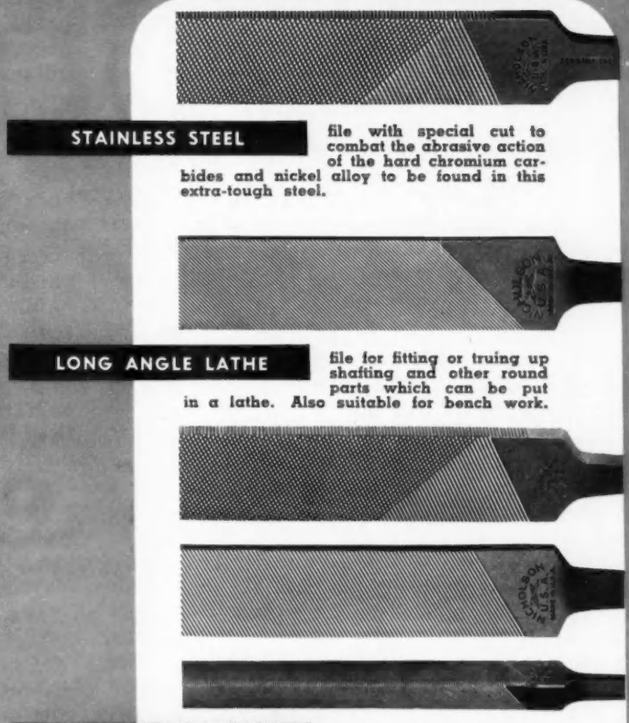

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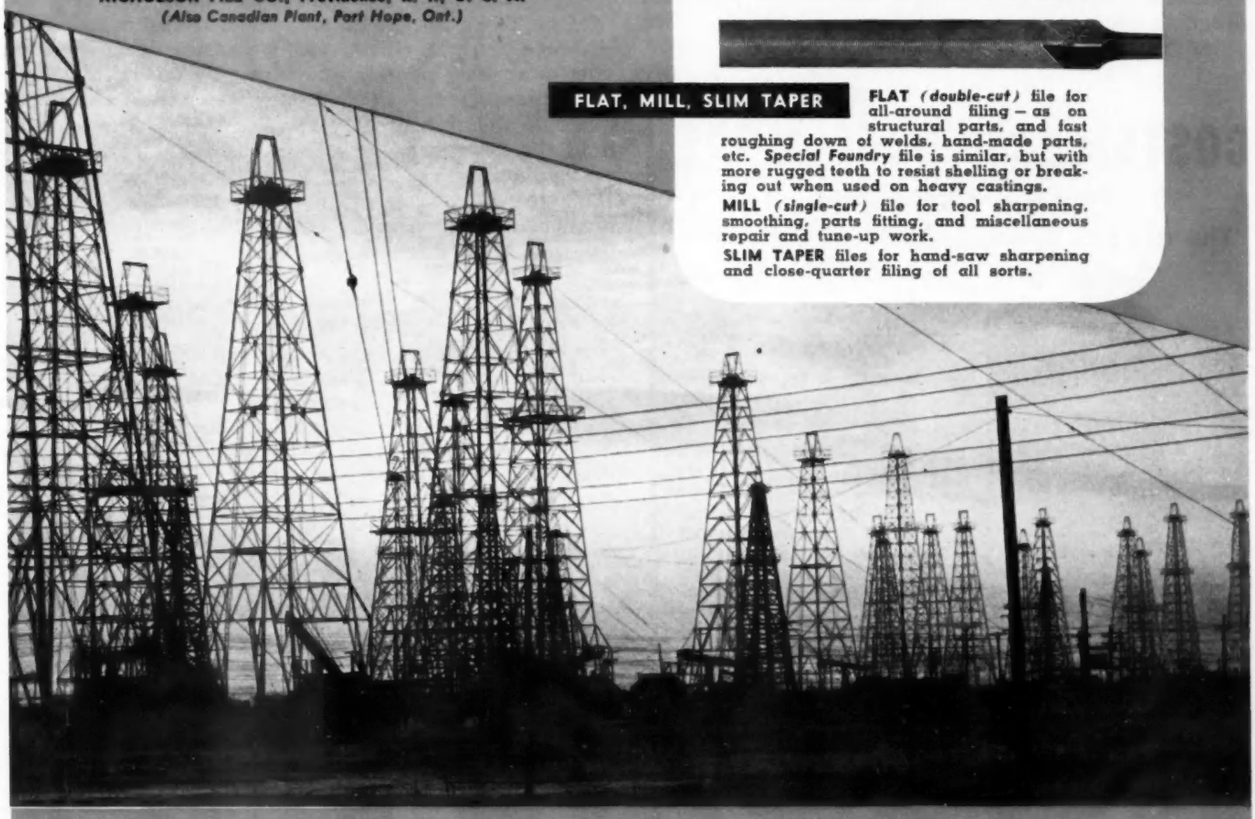

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pressure, and increase the pressure at 200°, liquid will begin to form at 400 pounds. At this point, the molecules are close enough together so that the larger attractive forces between the heavier molecules become operative and form a liquid phase. Above 700 pounds the smaller forces exerted by the light molecules remaining in the gas phase become more effective, due to the greater proximity of the molecules, so that the heavier molecules are attracted into the gas phase. Attraction in the liquid phase is also somewhat lessened by the dissolved ethane. In other words, the heavy constituent becomes more and more soluble in the dense gas phase, until retrograde vaporization is complete at 1030 pounds. In terms of pressure, the partial pressure of the heavy constituents in the dense gas phase is less than would be predicted from their concentration and the ideal gas laws.

It was noted that when a liquid phase is produced by reduction of pressure at contant temperature, there is a pressure at which the volume of liquid phase will be a maximum. This is the point at which the normal vaporization process begins to take the place of the retrograde condensation process.

Suppose we start wtih a high-pressure gas phase which will produce a liquid on isothermal expansion. As the molecules get further apart, the attraction of the light molecules for the heavy becomes less. Thus, the heavy molecules cannot be held in the vapor phase by the light molecules in opposition to the mutual attraction of the heavy molecules for each other, this latter attraction causing the heavy molecules (with some of the lighter) to form a liquid phase. The amount of liquid increases for a time as attraction in the gas phase decreases, but meanwhile evaporation by the normal process becomes more effective. The normal process is as follows: If the volume is increased, the number of molecules striking the liquid surface from the vapor becomes less for an instant, so that the number leaving the liquid exceeds the number entering, until a new balance is obtained with less liquid. This normal vaporization process becomes effective at pressures below that of maximum condensate. In simple language, the retrograde processes may be regarded as solution processes in the gaseous phase, the solubility of heavy constituents in the gas phase increasing with the amount of compression.

In the case of the complex hydrocarbon mixtures encountered in "condensate" reservoirs, the phase behavior is similar to that of the two-component system discussed, even if the complex mixture cannot be completely represented on a quantitative basis. Since the critical point (both temperature and pressure) is definitely established for a given composition, it is not likely that the mixture is at the critical point in the reservoir. Most likely it is a gas outside the two-phase region, or it is a gas in equilibrium with a liquid phase which is not produced from the well. This liquid phase may be a crude, even though the gas phase will yield a high gravity "condensate" on expansion.

The explanation of retrograde behavior is qualitatively the same for multicomponent mixtures as for the two-component system just discussed. For instance, suppose the gaseous mixture in the reservoir is at 4000 pounds pressure and 180° F. At this high pressure the light molecules, which make up most of the mixture, are close enough together to hold the heavier molecules in the gaseous phase. If the pressure is reduced at a constant temperature of 180°, the attraction of the light molecules for the heavy is lessened, and liquid condenses out. Retrograde condensation would probably occur down to about 1000 pounds, after which further expansion would result in a decrease in the amount of liquid by normal vaporization. In actual practice, of course, the temperature also drops as a result of the expansion, hence one could not be sure from such data alone that the condensation was not due merely to the temperature drop. However, it is well known from other observations, and from testing apparatus, that condensation will take place during isothermal expansion of such a "condensate" reservoir mixture. At lower temperatures the amount of retrograde condensation is much greater. If the reservoir mixture were cooled to, say, 40°, and then expanded isothermally, by far the greater part of the condensation would take place during the expansion, the total condensate being several times that produced at 180°. The amounts of condensate at various temperatures and pressures can of course be calculated approximately by the well known method of "equilibrium constants," combined with a knowledge of the composition of the mixture through hexanes or heptanes, adjusting "K" for the heavier constituents so that the calculated and experimental dew points agree.

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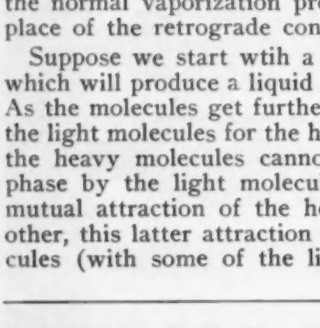

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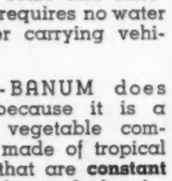

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REFERENCES

[1] Kuenen, Zeit. physik, Chem., vol. 11, p 38 (1893).
[2] van der Waals, Zeit. physik, Chem., vol. 5, pp 133-173 (1890).
[3] Kay, Ind. Eng. Chem., vol. 30, p 459 (1938).

Dew-Point Recorder Protects Gas Line From Freezing

By J. A. SETTER
Industrial Department, General Electric Company, Denver, Colorado

TO prevent condensation of moisture and possible freezing of its gas lines during the winter months, Colorado Interstate Gas Company, which furnishes Denver with natural gas from Texas fields, has built a novel dew-point recorder utilizing a photo-electric relay. With the recorder, continuous readings of temperature at which condensation occurs are made where the gas enters the Denver metering plant. If calculations based on the readings show the dew point to be too high, instructions are dispatched to dehydrating plants to remove more moisture before trouble occurs.

The equipment consists of a small tank filled with anti-freeze solution into which is immersed a U-shaped highly polished gold-plated tube. Through this tube passes a continuous flow of natural gas from a by-pass valve in the main pipe line. Both ends of the tube are provided with plate-glass windows. Above the windows, a light source and photo-electric relay are mounted so that the light shines through the tube and is reflected to the phototube.

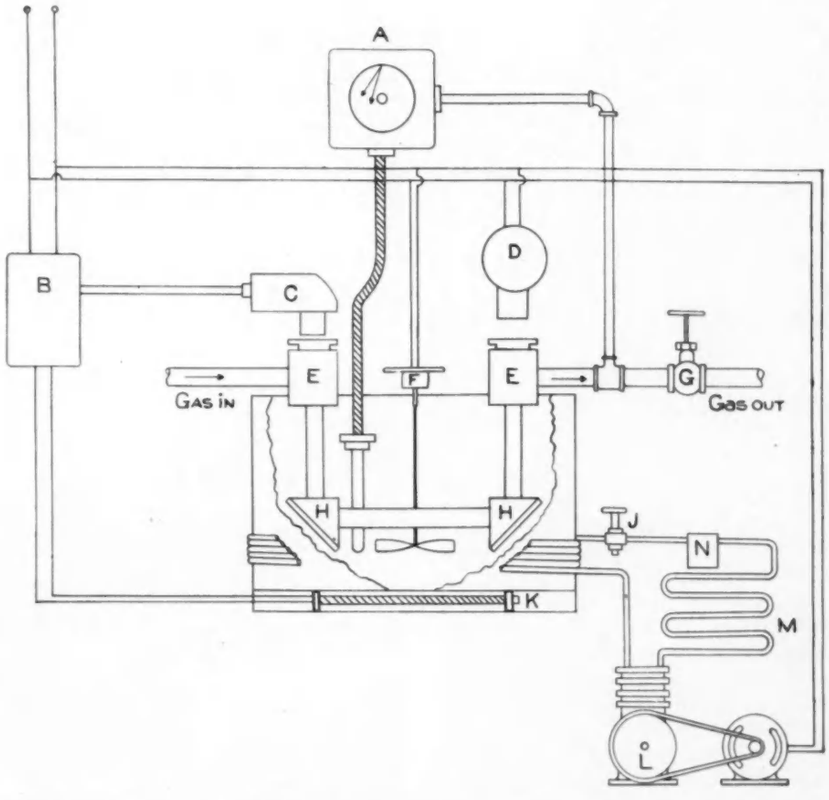
For controlling the temperature of the anti-freeze solution, the tank is cooled with coils of a small domestic refrigerator and heated with suitable strip heaters. As the cooling system reduces the temperature of the solution, the gas is chilled until a film of condensate is deposited on the inside of the highly polished tube, thus reducing the reflection of light to the phototube.

Being sensitive to a change of ½ foot-candle, the phototube operates to disconnect the cooling coils and connect the heaters to warm the solution. When the solution is warm enough, the condensate disappears and the process is repeated. A small motor-driven stirring paddle in the anti-freeze solution equalizes the temperature of the bath.

A recording-bulb-type thermometer immersed in the solution records the temperature of the solution. On the same chart the natural gas pressure is also recorded. From these two records, the dew point is calculated.

The temperature chart curve looks like a sine wave, with the tops and bottoms of the loops about two to three degrees apart, and with a frequency of about 10 to 15 minutes depending on the rate of flow of gas, change of pressure, and other variables.

The apparatus was conceived and constructed by W. R. Beardsley and L. F. Carter, of Colorado Interstate Gas Company.



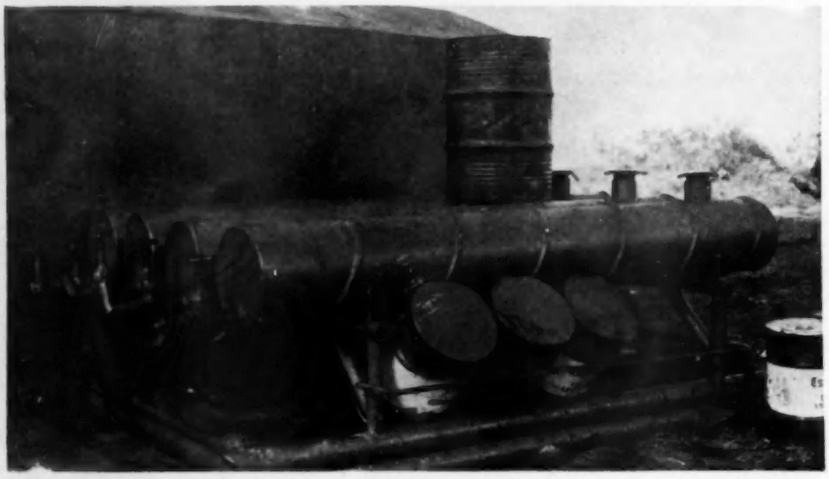
Schematic drawing of dew-point recording apparatus utilizing photo-electric relay. Apparatus built by Colorado Interstate Gas Company.

A—Recording Temperature and Pressure Gage. B—Photo-electric Relay. C—Photo-electric Tube. D—60-watt 110-volt Clear Bulb. E—Light Receptacles. F—Telechron 60-rpm Motor and Agitator. G—Throttle Valve. H—Light Reflecting Boxes. J—Refrigerating Expansion Valve. K—1500-watt Heating Unit. L—¼-hp Methyl Chloride Refrigerating Unit. M—Cooling Coils. N—Condensing Tank.

Practical Operating Hints for

1. LUBRICANT STORAGE

Unitized Rack Releases Drums and Provides Segregation for Various Rig Oil Requirements



Conductor pipe tanks, headed and with spigots and filling spouts, enable quick transfer of oils and proper selection of desired grades for specified derrick needs.

STORAGE units for lubricants and various oils used on drilling rigs may be made from conductor pipe cut to proper lengths with ends sealed to form horizontal containers. Near one end, a hole is cut through the upper wall of the cylinder, and a short nipple of 4-inch pipe is welded, to provide inlet to the tank. A plug of proper size is used as cap for the opening except when lubricants are being run into container.

In the opposite end, a hole is cut through the round sealing plate, and a nipple welded as outlet for the fluids, with a valve connected for regulating flow and an ell provided to direct into desired receptacle. The device is erected with a slight tilt toward the drain to facilitate emptying.

Four containers are set alongside each other, mounted on a single support made of 2-inch pipe welded to 4-inch skids, each drum held in its position by being inside a grooved saddle. In moving or skidding rig around field where highway travel is not required, the entire assembly is attached to the skids for the tool house, and the two structures moved as a single unit. The device offers convenient filling, easy draining, and ready portability for changing location.

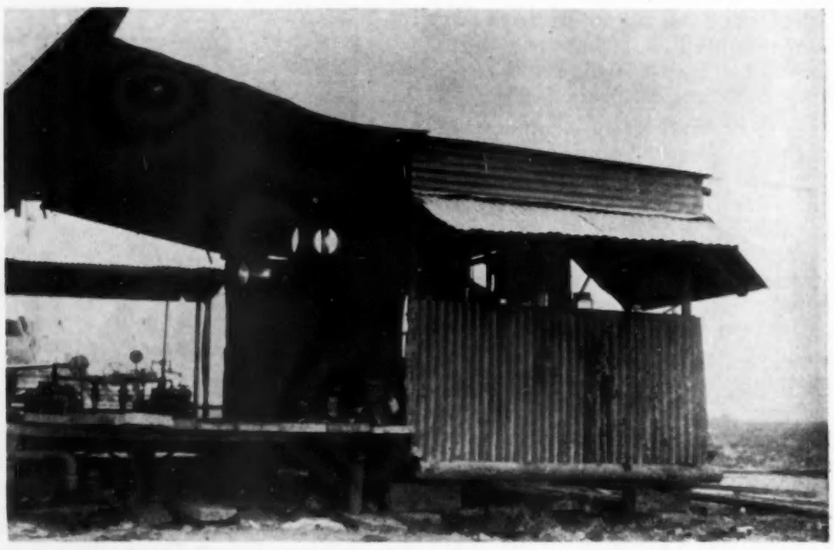
2. HOUSING

Portable Boiler House Betters Steam Control

PORTABLE housing for boiler equipment is used by one drilling contractor to furnish container for auxiliary apparatus and connections when moving. The power plant is confined inside the house, but in addition, ample space is provided for incidental apparatus which is easily lost or which constitutes a tedious moving task. Larger machinery, including feedwater pumps, is mounted on individual skids, and is moved as separate units.

The house is mounted on 6-inch skids, and welded to them is a framework made of 2½-inch pipe. Corrugated iron walls enclose the frame, the top being provided with a roof of the same material. On three sides are collapsible windows which may be propped open or closed and locked if desired. On the side nearest the boilers, the entire partition which constitutes its wall, hinged at the top, is lifted and propped open after setting in position in front of the boilers. The props are 2-inch pipe about eight feet long, pinned securely in place at the top by a spike welded in the proper place on the wall. After the wall is raised, the prop is placed in position with the spike inserted inside its open top. Weight of the flap is sufficient to steady the prop in this position, and danger from possible dislodgment is removed.

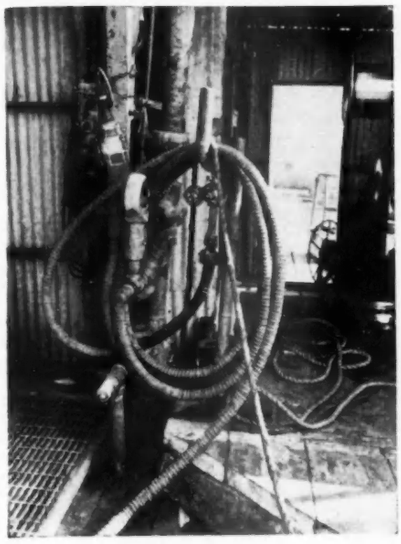
Tools, connections, unions, nipples, and other equipment used in rigging up and making boiler connections with pumps, are stored inside the house while moving, assuring the contractor that all apparatus will be in place when the new location is reached.



Hinged panels of sheet iron, forming tight enclosure when lowered, provide weather protection, reduce heat losses during periods of severe winds and storms.

THE DRILLING RIG . . .

3. HOSE CARE
Yoke on Water Supply Line as Hose Retainer



Extended delivery line carries elevated valve and supports hose clear of floor.

THE wash-down water line, of two-inch pipe, is brought up through the derrick floor by one operator and the upper end equipped with a U-shaped yoke into the bottom of which is welded a short nipple carrying the valve for controlling water flow.

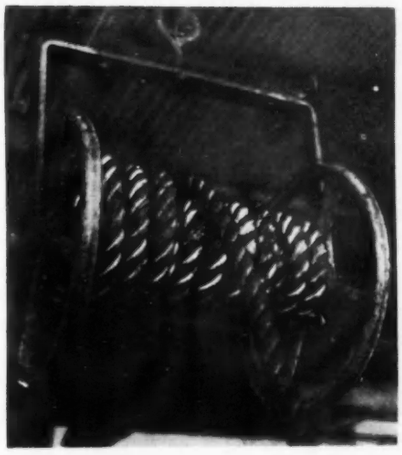
The yoke serves as support over which the hose is coiled when not in use, the mounting of the hose on the short valve nipple insuring a wide turn at the hose connection, and avoiding cramping or possible kinking at that point. The pipe support also keeps the valve high enough to permit easy manipulation, and tends to hold all the hose free from needed floor space.

Combination of water inlet and support in one pipe clears the floor of the duplication encountered when a separate stand is used to hold the hose, and when the attached end is apt to trail across the floor, and thus to threaten the safety of the drilling crew.

THE practical operating hints for the drilling rig and production man, appearing in these features each week, are secured from oil fields everywhere and offer suggestions that will help to improve field efficiency and safety. The items give an excellent picture of the remarkable ingenuity being exercised by the operating divisions of the industry. Contributions to these features will be paid for at the rate of $5 for each illustrated item accepted. Address contributions to "The Editor, THE OIL WEEKLY, Houston."

4. CATLINE CARE
Suspended Reel Stores Rope During Idle Time

THE cathead end of the catline often presents a source of danger to crew members who may accidentally become entangled or trip while carrying equipment. The end may be removed from floor and



Valve wheels form rims and winding grips of line storage reel and support.

out of way by suspending a large spool from a girder overhead, keeping the rope wound on the reel except when in use.

The reel is made of two large valve wheels welded to an 18-inch rod as an axle. A bracket of flat steel supports the wheels at their hubs, bolted to hold them in place without binding, and allowing rotation. The arm is in the shape of a "U," at whose top and in the center is attached an eye bolt, fastened to the overhead girder.

With the end of the catline fastened to the axle, the free portions of the line are spooled on the reel, taking up slack and lifting the line from the floor, eliminating the hazard of equipment lying on the floor and also adding to the neatness of the surroundings.

5. GAS FUEL
Steam Line Tempers Gas Valve Conditions

FREEZING of a valve on the gas line feeding the boilers is averted on one rig by using an improvised steam line which conveys steam directly from the boilers into a receptacle that encompasses the valve, utilizing condensed steam as heating element. This prevents freezing in cold weather and results in improved boiler pressures as a result of regular feed of gas.

An old grease bucket with bottom removed is used as heater, and is placed over the valve on the buried gas line. A ½-inch line carries steam from the boilers to the heater, its open end directed into the heater. A small gate valve on the steam line provides means of regulating steam and temperature.

Water is confined in the container as the bucket is placed snugly on the ground to prevent loss, and it is heated to any desired temperature, warming the valve. Steam rapidly condenses in the container, constantly replenishing water in the heater.

Bucket around gas valve with steam line feeder insures condensation pool for heating.

Practical Operating Hints for

1. PORTABLE MAST
Tubing Supports Bomb Sheave

Portable and demountable mast aids well check at minimum equipment and material outlay.

DURING the past several years, flowing wells, when completed, are usually stripped of their derricks. This makes necessary some other type of simple mast or tripod to facilitate running the pressure gauge instrument, a job which must be done at certain regular intervals, throughout the well's flowing life.

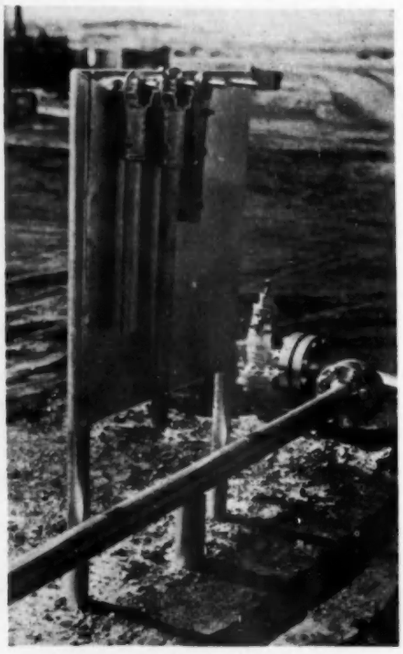
To hold down the initial cost of constructing such a temporary mast, yet not sacrifice strength or utility, one company has adopted, and makes up in the shop a sturdy mast approximately 35 feet high from two sections of discarded, but straight, 2½-inch tubing. Anchored in the concrete floor at the bottom, several feet from the well head, the mast is set so its top is directly above the Christmas tree. A steel loop in the mast top provides a place to hang the rigging supporting the pressure bomb assembly.

Provision for climbing is obtained by fastening a ladder with steel brackets along the upper side of the mast. This ladder usually is made up of short sections from dismantled derricks, which have been bolted together. Two guy wires, anchored in the concrete blocks that formerly supported the derrick legs, are connected to the mast at a point approximately 2/3 the distance up.

This mast is strong and dependable, and at the same time, almost 100 percent salvageable, the latter point being an especially commendable feature at this particular time.

2. TOOL CARE
Valve Handle Use Aided by Rack

THE degree of efficiency with which a company applies certain primary rules of field practice is reflected and easily detected in the manner in which the tools and minor accessory equipment are handled and maintained.



Pins present handles for quick choice directly above points of most frequent employment.

Care of valve handles is no exception to this rule. One company makes it a practice to keep all its plug-type valve handles hung on a small rack near the center of the area where they are most extensively used. The rack was welded out of 2-inch pipe and a piece of light tank sheet. Short pins cut from sucker rod and welded to the top member of the rack provide a place from which to hang the handles. This rack was set up near a large trap setting, where plug-type valves of several different sizes were in use. In addition to insuring against probable loss of the handles by misplacing them, their presence on the rack makes it easy to choose the one needed for a certain valve with a minimum of time wasted, in the event of an emergency.

This same practice may be duplicated by some companies who set up a small painted steel sign at or near the Christmas tree, trap setting, or flow control apparatus assemblies. The back of such a sign, equipped with several welded-on pins or long bolts could be put to practical use as described above.

3. COUNTERBALANCE
Weight Box Expedites Well Pumping

ONE of the most important considerations of the operator of a stripper well lease is that of properly counterbalancing the various wells so that the load is evenly balanced and properly distributed over the several wells on the lease. As lowering or rising fluid levels

Weight regulation is attained by varying amount of counterweight stored in jack box.

THE PRODUCTION MAN . . .

change, the rod load and the lifting characteristics of each well also change, necessitating corresponding shifts in the individual well counterbalancing.

In shallow fields wherein wells are pumped by rod-line jacks, the counterbalancing weight often has to be placed as near as possible to the jack head, so that weight will tend to force the rods down the hole on each down stroke. This is to enable the rods to fall faster, and therefore permit maximum plunger travel to be obtained on each upstroke.

A simple, easily built counterweight that meets these requirements may be made up by following the example set by one operator who utilizes short closed sections of light weight "big-inch" casing, small oil drums, or other similar containers, anchoring them on the top of the walking beam of those jacks which need attention. By cutting a fairly large handhole out of the top of the container, miscellaneous discarded fittings or scrap iron material may be placed inside until the weight is sufficient for properly counterbalancing the well.

This type of counterweight is of particular advantage on shallow stripper wells, since a difference of 50 pounds may mean the difference between a balanced or unbalanced well. When small weights are involved, it is of definite advantage to have facilities for changing these comparatively small increments of weight with a minimum of effort.

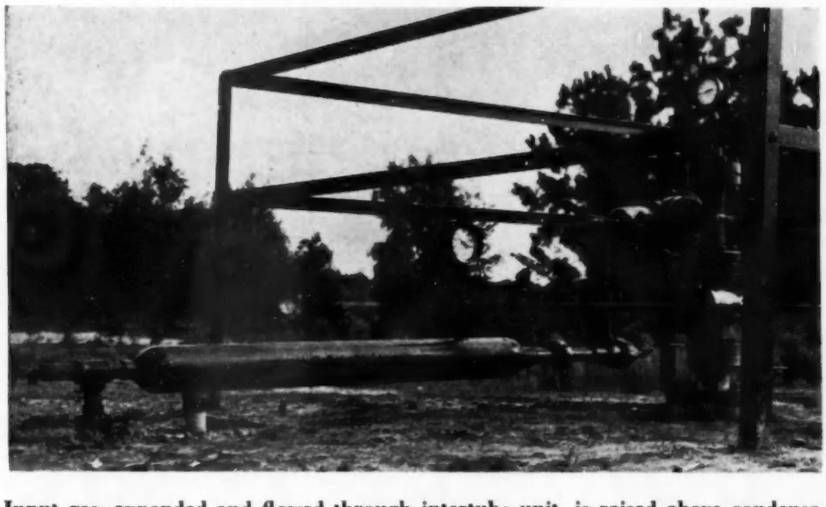
4. REPRESSURING

Well Fluid Exchanger Prevents Gas Freezing

INPUT gas, if allowed to feed through a choke into the well, often effects a temperature drop which results in troublesome freezing at that point. One operator eliminates tendency to freeze with a heat exchanger which uses the well fluid as heating medium.

The exchanger is made from a piece of 7-inch casing about six feet long, tapered almost to a seal at both ends and provided with fittings. At one end is attached the gas line, which enters the exchanger as a 2-inch pipe, after passing through a choke nipple which restricts volume of gas admitted to the well casing, but at the same time causes a reduction in pressure and a drop in temperature which may result in freezing. The gas pipe is swaged to ½-inch immediately upon entering the device, this small line traveling almost the length of the exchanger, then through ½-inch connections to convey gas to the well.

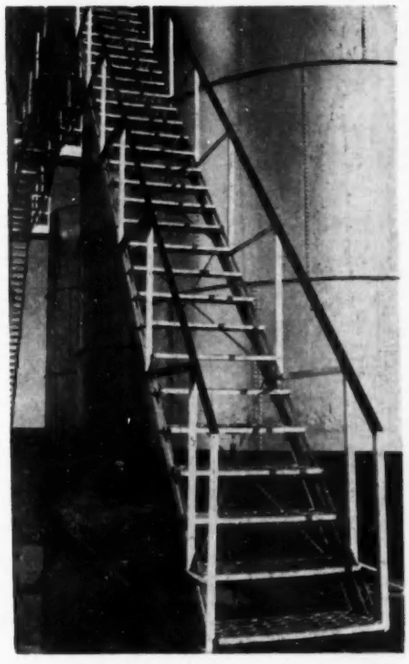
To prevent freezing, gas is heated after passing through choke by directing the well fluid through the large cylinder to allow it to envelop the gas line. Well flow reaches the surface equipment and is directed into the end of the heat exchanger at the end opposite that at which the gas enters, connecting by means of a 2-inch line. At the outlet end, a 2-inch line makes its exit at the bottom of the container. Fluid passes without restriction through the apparatus, contacting and warming the small pipe containing gas and restoring clear-flow temperatures.



Input gas, expanded and flowed through intertube unit, is raised above condensation temperature and freezing of choke and well-head fittings thereby eliminated.

5. LEASEKEEPING

Black Railing Betters Stair Appearance



Oil smudges on these rails are masked and do not mar otherwise clean surroundings.

MAINTAINING a tank battery location clean and neat calls for considerable cleaning and painting, to say nothing of a constant effort on the part of the gauger to see that a minimum of oil is left on the equipment in the course of routine work.

The gauger of one company reduces the amount of cleaning to a minimum that ordinarily would be necessary on the tank steps hand railing by painting it black. This part of the equipment usually is the first to become smudged through constant daily use. Painting it black does not lessen the amount of oil smears that would collect on the railing, but in having it black, the periods between cleaning or painting may be lengthened considerably.

ACTUAL CASE HISTORY

TUBING COLLARS lasted only 10 days

before installing Patterson-Ballagh Tubing Protectors

NOW THEY DON'T NEED REPLACEMENT

A prominent Rodessa, La., Operator has made amazing savings by using these Tubing Protectors.

They are now used on every one of the Operator's 50 wells.

There are from 8 to 38 on each well; more than 1000 Tubing Protectors in service.

Some have been in service almost three years and none has ever worn out.

Before using Patterson-Ballagh Tubing Protectors one hole worn in the casing in one of the wells by a collar cost the Operator thousands of dollars to repair.

Some of the wells were so crooked that the collars would last but 10 days before Protectors were installed.

Now this Operator has adopted Patterson-Ballagh Tubing Protectors as standard, with instructions to install whenever wear shows.

"Best Bet Yet"
for crooked pumped wells

See Composite Catalog

PATTERSON-BALLAGH
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Los Angeles · Houston · New York City

PATTERSON-BALLAGH TUBING PROTECTORS

HIGHLIGHTS IN THE WEEK'S NEWS

Allowables

Allowables for January Close to OPC Allocations

Production of crude oil will conform closely with indicated requirements as foreseen by the Office of the Petroleum Coordinator, although several states had fixed allowables before OPC took over from the Bureau of Mines the responsibility of estimating requirements by states and thereupon "recommending" production rates accordingly.

In the future, the Bureau of Mines will continue to estimate national demand, but OPC will allocate the demand among the states.

The allowable picture for January, consequently, is considerably different from that of any previous month, as indicated in the accompanying table. California now is under direct control of the petroleum coordinator, and a committee under him has replaced the committee maintained by the operators of the state as the administrative body for California proration. The new committee has the responsibility of making the state's production conform strictly with OPC wishes.

Similarly, Michigan conservation authorities henceforth must take into consideration total production that will occur in that state and promulgate regulations that will result in desired production, whereas regulations heretofore have been strictly on a field conservation basis, without the setting up of a state allowable.

Moreover, Illinois now is "on the spot," and with allowables assigned to the state, authorities in the state must make actual production conform with the allocations. Consequently, early enactment of a state proration law becomes a strong probability, and in absence of such a law, contemplated regulation will be achieved, apparently, through regulation of supplies of materials and equipment for drilling more wells.

Louisiana had adopted allowables for January before OPC made allocations, but upon learning of the new program, conservation officials indicated they would fall in line February 1 or if OPC so desired, the field quotas would be revised at the middle of January. The state allowable, meanwhile, is 31,811 barrels daily above the OPC "recommendation."

Oklahoma also is above the OPC schedule—by 9300 barrels—because the state allowable had been fixed before the new program was announced from Washington.

The Arkansas allowable is slightly above the OPC allocation, but state authorities expect the state's actual production to fall within the quota.

Kansas and New Mexico conformed exactly with OPC allocations, and the Texas Railroad Commission ordered allowables that are expected to make the state's actual production conform very closely with the indicated requirements for Texas crude.

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Control

Illinois Drill Permits Stop; Legislature to Consider Law

The Illinois oil and gas conservation division has been ordered by the federal government to suspend temporarily issuance of oil and gas drilling permits. The order was said in official circles to have been sent by Wirt Franklin, Chicago, regional director of the office of Petroleum Coordinator Harold L. Ickes. The suspension of state drilling permits was ordered by Franklin pending receipt of the order from Washington limiting one well to 40 acres.

Governor Dwight H. Green is slated to include a powerful state oil control bill in a call for a supplementary emergency session of the Illinois general assembly after 44 of the state's largest buyers of crude petroleum and representatives of principal oil firms adopted a resolution December 29 asking for such legislation.

The action was taken by buyers and operators in a last-ditch effort to forestall complete federal control of the Illinois oil industry.

Leaders of the industry, including a number of independent operators, called the meeting voluntarily in Springfield after the governor announced Secretary of Interior Ickes had established a state quota of 386,400 barrels daily during January. Operators said the purpose of the session was to determine a course of action to be taken by the industry in view of the coordinator's ruling.

The resolution was drawn and adopted after former Governor John Stelle,

January Allowables Conform Closely With Petroleum Coordinator's Recommendations

(Barrels Daily)

STATE	Bureau of Mines Estimate of Demand for December	Recommendation of Petroleum Coordinator for January	State Allowable Beginning of January	Difference January Allowable From Recommendation	Percent Difference January Allowable From Recommendation
Arkansas	76,500	73,700	75,689[1]	+ 1,989	+ 2.7
California	635,800	646,200	646,200[2]	.....	.....
Kansas	260,700	259,900	256,900[3]	— 3,000	— 1.2
Louisiana	340,000	329,300	361,111[4]	+31,811	— 9.7
Michigan	52,300	47,400	54,850[5]	+ 7,450	+ 15.7
New Mexico	116,100	121,200	121,200	.....	.....
Oklahoma	460,000	415,700	425,000	+ 9,300	+ 2.2
Texas	1,479,700	1,573,500	1,551,457[6]	—22,043	— 1.4
Total 8 Prorated States	3,421,100	3,466,900	3,492,407	+25,507	+ 0.7
Illinois	426,500	386,400	391,150[5]	+ 4,750	+ 1.2
Other States	291,400	285,100	.....	.....	.....
Total United States	4,139,000	4,138,400	.....	.....	.....

[1] Allowable for first quarter of year actual production in January not expected to exceed Office of Petroleum Coordinator's figure of 73,700 barrels.

[2] The District 5 Production Committee has named a Conservation Committee to distribute the California January quota of 646,200 barrels, as assigned by Petroleum Coordinator Ickes.

[3] Order also will permit 3,000 barrels for new wells; total same as OPC estimate of demand.

[4] Set before OPC recommendation made: this explains 31,811-barrel excess. Louisiana Conservation Committee will comply with OPC recommendation beginning February 1 (or on January 15 if OPC wishes).

[5] No definite state allowable fixed under prescribed regulations; figure shown here represents daily average production in four weeks ended December 27.

[6] Calculated daily average of actual production at beginning of month, allowing for underproduction of 3½ percent below net allowable, which was figured at 1,620,659 barrels daily as of January 1. However, allowable normally increases as new wells are completed, and consequently, actual daily average production for month may be expected to be slightly greater than average as calculated for January 1. Under January order, most Texas fields were ordered shut down January 4, 11, 15, 18, 25, 30 and 31.

of McLeansboro, who led successful opposition to an administration-supported regulatory bill in the last session of the general assembly, asked leaders of the industry to "lay our cards on the table, get behind Governor Green and pass proration legislation for duration of the war only."

"We haven't the right to sit in this room and agree to buy a certain amount of oil," Stelle said. "Instead, let's sit around the table and for the benefit of the small refineries and pipe-line operators in Illinois and for this emergency only comply with the patriotic output ruling made last week by Secretary Ickes."

Following the session, Stelle cautioned major operators to heed his request for "consultation with the little fellow if legislation is drawn." His warning was buttressed by a powerful and friendly Democratic minority in both houses of the legislature which holds a block of votes sufficient to defeat emergency legislation.

Clarence T. Smith, of Flora, Illinois representative on the interstate oil compact commission and a confidante of Governor Green, said he had been opposed to proration in the past and that "I am still opposed to proration, but I subscribe to this proposition and heartily endorse this move for the duration."

Smith then introduced the resolution which was seconded by Stelle, who gained approval of a proviso that smaller buyers will be called to attend subsequent conferences dealing with drafting of the wartime control legislation.

Before the session had been called, the oil buyers and operators declined to enter into a voluntary agreement on oil purchases pending receipt of a ruling on legality of such a course from both the attorneys general of the United States and Illinois that such a course would not be construed as a violation of either the Sherman anti-trust act or existing state oil laws.

G. C. Curtis, superintendent of the new state division of oil and gas conservation, presided at the meeting.

"We might as well make up our minds that we are going to have to cooperate and I think we all want to support the government," he said.

Indiana Plans Shutdown Late in January

A shutdown of all Indiana wells for a brief period late in January was predicted by Ralph Esarey, state geologist, in order to comply with the OPC quota of 17,300 barrels daily.

Esarey's statement was made at a meeting of about 80 operators, purchasers and refiners in Vincennes, where methods of setting up machinery to enforce OPC quotas were discussed. Indiana's present output ranges from 18,500 to 20,000 daily.

A seven-man committee was named to confer with Esarey later in the month and perfect a plan for observing monthly quotas.

The committee: Arch F. Dye, Evansville; E. C. Welch, Illinois Pipe Line Company, Bridgeport, Illinois; W. C. Vickery, Farm Bureau Refinery, Mt. Vernon; Ben F. Hake, Gulf Refining Company, Indianapolis; Ralph A. Damp, Carter Oil Company, Mattoon, Illinois; Barron Kidd, Evansville, and A. F. Lager, Siosi Oil Company, Terre Haute.

Michigan Sees Shortage Under Washington Order

In compliance to Coordinator Ickes' 47,400-barrel daily January recommendation, P. J. Hoffmaster, state supervisor of wells, ordered all flush fields in Michigan cut to 125 barrels day in Basin and one shallow field in southwest cut to 75 barrels day on a flat per-well daily basis.

The order, effective January 1, Hoffmaster said, may result in a shortage of 5000 or more barrels a day for Michigan refineries. He said the state's figures on market demand would be re-checked and if substantially correct that a request would be made for an increase in February.

The January allowable, along with 40-640 acre spacing, caught Michigan flat footed and appeals for exemptions were being directed to the coordinator. "This is a war and our obligation is for full cooperation," Hoffmaster said. He emphasized, however, that Michigan conditions may be so different from the country as a whole that adjustments should be made if the full benefit of oil and gas reserves in the state are to be of benefit in the national effort.

Hoffmaster said an up-to-date state survey showed the Michigan refining demand "firm at 51,700 barrels a day" not including 28,000 barrels daily being imported by a major refining company at Detroit by pipe line from the Mid-Continent and Illinois.

The new order for January reduces Reed City from 200 to 125, Roscommon and Winterfield from 350 to 125 and Adams from 150 to 125. West Hopkins was set at 75 and did not have an allowable before. Michigan's settled field production was reported averaging 28,000 barrels daily exclusive of the new and prorated areas.

C. W. Taggart, the state's biggest single developer of natural gas, said compliance with the 640-acre program on Stray sand wells at 1500 feet could only be done by jeopardizing reserves now earmarked for national defense plants in Lansing and Flint.

Hoffmaster immediately forwarded a request to the coordinator for an exemption in the Reed City field, now 80 percent developed on a 20-acre pattern. In other fields, he said, 40-acre units can be adopted without serious disruption. However, he said data at hand indicated that a program permitting eventual drilling upon a 20-acre pattern seems preferable to a 40-acre unit, thus suggesting a deferred program during the emergency.

Oklahoma Arranges Priority Meeting

A statewide meeting of OPM priorities experts will be held in Tulsa, Tuesday, January 6, according to arrangements made by Tulsa Chamber of Commerce. The meeting, in the nature of a "Priorities Clinic," will be under the direction of the Division of Priorities, OPM, and Mason Manghum, Washington, D. C., head of the industrial contact and education unit, priorities division of OPM, will be the official in charge of the program.

A general discussion of priorities problems will follow a luncheon. Group discussions will take up specific points.

OPM officials will make up the panel of speakers, these to include A. L. Williams, chief of the Production Requirement Section; Jerome Law, chief of the Maintenance and Repair Section; and James E. Hughes, OPM priority specialist assigned to the OPC.

Louisiana Operators Called To New Orleans January 6

An informal meeting to discuss with Louisiana oil and gas operators the new emergency conditions introduced by the recently promulgated Conservation Order M-68 has been scheduled by the State Department of Conservation. The meeting will be held in the Convention Hall of the Monteleone Hotel, New Orleans, at 2 p.m., January 6, 1942.

Oklahoma Natural Gas Plans 1942 Expansion

Joseph Bowes, president of Oklahoma Natural Gas company, has announced that the company's Board of Directors has approved the expenditure of $1,410,000 during the next year for the addition and extension of the company's facilities.

He stated that approximately 150,000 would be for the increasing of gas reserves connected to the company's system; $550,000 for the addition of new transmission lines and the relocation and replacement of present lines; and approximately $600,000 for the improvement of the distribution systems in various cities and towns throughout the company. A large portion of this amount must be spent in connecting to the company's system the new customers who have been brought into the territory by defense projects throughout the state.

Three Substantial Lease Deals Reported in Texas

Trading in producing properties continued active through the end of the year, with three substantial deals concluded the past week.

Atlantic Refining Company is credited with having paid about $3,000,000 for undivided half interest in American Liberty Oil Company's 190 flowing and pumping wells in the Wasson field, West Texas. Deal also involves operating control of the former's 30-mile 6-inch carrier that connects the Wasson field with Atlantic Pipe Line Company's trunk line at Hobbs, New Mexico. Bulk of the Wasson field wells are on leases farmed out by The Texas Company March 1, 1939, with the latter retaining sliding scale royalty and option to purchase the oil after five years. Atlantic holds contract to purchase up to 5000 barrels daily from the properties for five years, paying posted price delivered at Hobbs.

Atlantic Refining Company added to its East Texas field holdings through purchase of the capital stock of the Reprimo Oil Corporation, headed by J. B. Stoddard of Dallas, for reported consideration of $500,000 cash. Deal involves 10 wells and undeveloped acreage in Oklahoma and Louisiana.

Shell Oil Company completed its second major purchase in North Texas through acquisition of stock control of the United Producers Company, headed by Merrill W. Blair, Wichita Falls, for in excess of $500,000 cash. Latter has net daily allowable of 600 barrels in

North, East and South Texas areas. Tulsa officials of Shell Oil Company elected to handle the affairs of the United Producers Company are: R. B. Roark, president; George W. Cunningham, vice president; and J. M. Flaherty, secretary-treasurer. Fred Sehmann of Wichita Falls was designated assistant secretary.

Canadian Coals Show High Hydrogenation Oil Content

Recent tests carried out at Ottawa by the Department of Mines and Natural Resources to ascertain the suitability of various Canadian coals for producing oil by the hydrogenation process, indicate that coals from several points will be able to produce gasoline, says James Dickson, chief British Columbia inspector of mines.

It was found by these tests that coal from two widely-separated Canadian points—Sydney, N. S., and Nicola, B. C.—give higher yields of oil than standard English coal. The Nicola coal was found to contain 148 gallons of gasoline per ton; the Sydney coal 154 gallons per ton. The English coal mined at Durham contains 143 gallons per ton.

In Canada, however, there are no plants beyond the experimental stage; production of gasoline from coal is a tremendously expensive undertaking.

"On Vancouver Island present indications are that the Comox area will be the chief center of coal production and that while the Nanaimo area will no doubt produce coal for many years it will not again regain its pre-eminence as a coal-producing area," Dickson says.

"The Merritt-Princeton area is capable of producing a large tonnage of coal if markets were available. The East Kootenay coal field has by far the greatest tonnage of coal, both developed and probable, in the established coal mining area of the province."

Canadian Gasoline Rationing in April

Rationing of gasoline becomes effective in Canada April 1 and after that date ration coupons must be used each time gasoline is purchased. Munition Minister Howe announces that the desired curtailment will be achieved mainly through the limitation of non-essential private car driving. Commercial vehicles will be allowed gasoline up to their proven normal requirements.

Each vehicle will be allowed a stated number of units of gasoline for the year. Quantities of gasoline in each unit from time to time may be varied by the oil controller as circumstances require.

Tourists while in Canada will be entitled to purchase gasoline "to the same relative extent as Canadians who drive cars which fall within the basic category."

Under the plan each vehicle owner must register with the oil controller, and a gasoline license and ration coupon book must be obtained for each vehicle. Licenses and ration coupon books will not be transferable and will remain the property of the oil controller. They may be cancelled or recalled at any time. A registration fee of $1.00 will be charged for each vehicle. Licenses and coupon books will be issued only for 1942 provincially licensed vehicles.

Text of Texas Amended Spacing Rule

SO AS to clear up some of the misunderstandings that apparently exist in the minds of oil operators, the full text of the Texas Railroad Commission order of December 24 amending the state spacing Rule 37 is published here. To drill on any pattern less than 1320 feet from another completed or drilling well, or less than 660 feet from the property line, it is necessary to make application for an exception to the amended rule. How to apply for this exception is set forth in the text of the amended order, which follows:

"RULE 37—
STATEWIDE SPACING RULE

Section A. No well for oil or gas shall hereafter be drilled nearer than thirteen hundred and twenty (1320) feet to any other completed or drilling well on the same or adjoining tract or farm, and no well shall be drilled nearer than six hundred and sitxy (660) feet to any property line, lease line or subdivision line; provided that the Commission in order to prevent waste or to prevent the confiscation of property may grant exceptions to permit drilling within shorter distances than above prescribed when the Commission shall determine that such exceptions are necessary either to prevent waste or to prevent the confiscation of property. When exception to such rule is desired, application therefor shall be made for same by filing FORM 1 in duplicate, completely filled out, with the Deputy Supervisor of the Railroad Commission in the Commission District where the well or wells are located, which application shall be accompanied by a plat or sketch drawn to the scale of one (1) inch equalling four (400) feet, accurately showing to scale the property on which permit is sought to drill a well under an exception to this Rule, and accurately showing to scale all other completed, drilling and permitted wells on said property; and accurately showing to scale all adjoining surrounding properties and wells. Such application shall be verified by some person acquainted with the facts, stating that all facts therein stated are within the knowledge of the affiant true and that the accompanying plat is accurately drawn to scale and correctly reflects all pertinent and required data. Such exception shall be granted only after at least ten (10) days' notice to all adjacent lessees affected thereby has been given and after public hearing at which all interested parties may appear and be heard, and after the Commission has determined that an exception to such rule is necessary either to prevent waste or to protect property belonging to the applicant from confiscation. All pending applications shall be amended to conform to this Rule before being acted upon.

Section B. In order to prevent waste or to prevent the confiscation of property, the Railroad Commission of Texas may upon its own motion or order, issue or grant a permit or permits for the drilling of any well or wells for oil or gas nearer than thirteen hundred and twenty (1320) feet to any other completed or drilling well on the same or adjacent tract of land or farm and nearer than six hundred and sixty (660) feet to any property line, lease line or subdivision line as hereinbefore prescribed whenever the Commission shall determine that the drilling of any such well or wells is necessary to prevent waste or to prevent the confiscation of property. When in the opinion or judgment of the Commission waste or confiscation of property is reasonably imminent or is taking place on any leasehold, the Commission may, on its own initiative or motion, order a hearing for the purpose of determining whether such waste or confiscation of property is taking place. Such permit or permits shall be issued or granted only after at least ten (10) days' notice to the owners of said leasehold and to all adjacent lessees affected thereby has been given, and after public hearing at which all interested parties may appear and be heard and after the Commission has determined that that the drilling of any well or wells for oil or gas is necessary either to prevent waste or to protect the owners of said leasehold from confiscation.

Section C. In filing FORM 1 as hereinabove provided it shall not be necessary to file more than one plat.

Section D. In the interest of protecting life and for the purpose of preventing waste and preventing the confiscation of property, the Commission reserves the right in particular oil and gas fields to enter special orders increasing or decreasing the minimum distances provided by this Rule.

Section E. No well drilled in violation of this Rule without special permit obtained, issued or granted in the manner prescribed in said Rule, and no well drilled under such special permit or on the Commission's own order which does not conform in all respects to the terms of such permit shall be permitted to produce either oil or gas, and any such well so drilled in violation of said Rule, or on the Commission's own order shall be plugged.

Section F. This Rule shall in no wise rescind, abrogate or modify the provisions of special orders applicable to the spacing of wells in particular fields requiring minimum spacing distances either greater or smaller than provided herein.

Section G. This Rule shall become effective January 1, 1942, and so remain until changed by order of the Commission."

In the adoption and promulgation of this order, it is here declared that the Commission intends to adopt each phrase, sentence and paragraph separately and independently of each other such phrase, sentence and paragraph and if any portion of this order or any portion of the Rule hereby adopted shall be declared invalid, such declaration and such invalidity shall not affect any other portion.

Priority Rating Plans

[*Continued from page 11*]

cumstances giving rise to the exigency.

"The plan provides both for an allocation of material and a rating on the material required. Once definite material quantities are certified and ratings are assigned, endorsement on the order for the material is all that is required to execute a rating. Thus the plan facilitates purchase of materials and saves time and effort during the entire quarter, obviating the necessity for filing an application for rating with each separate order.

"All ratings given under the authority of P-90 and on Form PD-25 are extendible to your suppliers and in turn to suppliers who may furnish the first supplier.

"The plan is applicable to a given division of your business provided separate accounts and inventories have been kept. Thus, for example, if only a portion of your plant is used to manufacture petroleum machinery and a separate inventory and accounts have been kept on this part of your business, a PD-25A may be executed for this portion of your plant and business separately.

"The plan offers a far more acceptable method of studying the details of your needs than is the case where numerous separate applications are filed."

Upon return of the completed questionnaires, OPM will figure the material needs of equipment manufacturers and attempt to make a balance against the probable requirements of the oil industry for field and other equipment, with a view to allocating an appropriate share of the supplies of scarce materials to the industry.

Several estimates of the need of the industry for various materials have been made. It is understood that these estimates show a considerable variance which will have to be reconciled and that OPM experts are making a study of drilling and other operations over an extended period in the past in an effort to calculate probable requirements.

Petroleum in 1941

[*Continued from page 16*]

ly to 31,299, second busiest drilling year in the industry's history. Of the 1941 wells, 21,584 were completed successfully as oil wells and 2869 as gas wells. The remaining 6846 were unsuccessful dry holes.

The country's refineries processed a record 1,406,976,000 barrels of crude petroleum in 1941, and met new peak demands for all major products except kerosine. Total domestic and export demand for these products, with high domestic demands more than making up the further decreases in exports, were: motor fuel, 683,843,000 barrels; distillate fuel oil, 188,513,000 barrels; residual fuel oil, 395,527,000 barrels; kerosine, 71,400,000 barrels; and lubricating oil, 41,500,000 barrels.

The most spectacular increase was reported in the domestic demand for lubricating oil, which gained nearly 30 percent over 1940. Exports of lubricating oil also declined less than the exports of any other major product.

Wholesale prices of petroleum products, according to the Bureau of Labor Statistics, remained far below the average for all commodities, but rose from an average index of 50.0 in 1940 to 57.2 for the first 10 months of 1941. This compares with an average of 87.1 for all commodities. Crude oil prices, as indexed by the 36-degree Oklahoma - Kansas quotation, increased from $1.02 in 1940 to $1.17 at the end of 1941.

The average retail price of gasoline in 50 representative U. S. cities, exclusive of taxes, gained slightly in 1941, rising from 12.75 cents in 1940 to 13.30 cents a gallon. The all-time low was 12.41 cents in 1933. Gasoline taxes increased again in 1941 for the third successive year to the all-time high average of 5.93 cents a gallon, equivalent to a sales tax of 45 percent; the 1940 average was 5.66 cents. Average cost to motorists was therefore 19.23 cents, against 18.41 cents in 1940.

Total gasoline taxes reached the staggering total of $1,335,000,000, of which about $965,000,000 were collected by the states, up nearly 12 percent from 1940, and about $370,000,000 by the federal government, an increase of 31 percent.

Approximately 34,635,000 motor vehicles were in use during 1941, with about 31,600,000 being operated at the end of the year. On the average these vehicles used 800 gallons of motor fuel in 1941, compared with 752 gallons in 1940. The motor fuel price was $106.40, but taxes amounting to $47.44 increased the cost to motorists to $153.84.

Crude Oil Prices

(Per barrel of 36° A.P.I. gravity Oklahoma-Kansas oil)

YEAR	High	Low
1937	1.22	1.10
1938	1.22	1.02
1939	1.02	1.02
1940	1.02	1.02
1941	1.17*	1.02

* Up to December 17.

Index of Wholesale Prices

(1926 = 100)

(U. S. Bureau of Labor Statistics)

YEAR	Petroleum Products	All Commodities
1937	60.5	86.3
1938	55.9	78.6
1939	52.2	77.1
1940	50.0	78.6
1941 (10 mo.)	57.2	87.1

Motor Vehicle Registration and Use

YEAR	BUREAU OF PUBLIC ROADS				A.P.I. Estimated Total Vehicles In Use End of Year
	Official Registration	Publicly Owned Vehicles	Automotive Dealer Plates	Total Vehicles	
1939	30,615,087	394,783	142,034	31,151,904	28,613,000
1940	32,025,365	427,496	152,085	32,604,946	30,010,000
1941 (Est.)	34,000,000	475,000	160,000	34,635,000	31,600,000

Number of Oil Burners in Operation

YEAR	Domestic	Industrial	Total
1937	1,543,000	115,700	1,659,500
1938	1,688,500	129,700	1,818,200
1939	1,909,900	146,300	2,071,500
1940	2,162,800	167,000	2,306,900
1941	2,303,000	201,000	2,504,000

Refinery Runs High; Fuel Oil and Gasoline Stocks Up

Statistics of the industry continued generally favorable in the week ended December 27, as refinery runs again were near the all-time peak, with the result that stocks of gasoline and heavy fuel oil were substantially increased, while there was only a seasonally normal withdrawal of light fuel oil from storage.

Runs to stills averaged 4,096,000 barrels daily, up 26,000 from the previous week and close to the record throughput of 4,120,000 barrels a day recorded in the week ended October 18. The runs were 14.3 percent, or 514,000 barrels daily, higher than in the corresponding week a year ago, when they averaged 3,582,000 barrels a day. The plants of the country were operated at 92 percent of rated capacity, with all exceeding that figure except those in California and the Rocky Mountain region.

Crude oil production for the week was a little under the runs to stills, as Texas for the 7-day period was temporarily under normal, under its shutdown system. The national output averaged 4,080,850 barrels daily, against 4,315,150 the week before. A withdrawal of crude from storage was indicated, therefore, for the week. However, there was a million barrel addition in the previous week, when stocks rose to 243,617,000 barrels, according to the Bureau of Mines.

In response to heavy runs to stills, gasoline production materially exceeded current demand, and there was a 2,200,000-barrel addition to stocks, that is, from 89,297,000 to 91,479,000 barrels. The nation now has over 8,000,000 barrels or nearly 10 percent more gasoline than a year ago. Additions were the rule during the week in all districts except the East Coast and North Louisiana-Arkansas, where withdrawals occurred. However, the East Coast has 2,500,000 barrels more than a year ago. The Middle West has over 2,000,000 barrels more, and the upper Mid-Continent and Texas Gulf Coast show gains of over a million barrels each. California last week added 139,000 barrels and then had 202,000 more than a year previously.

Stocks of gas oil and distillate fuel were reduced from 51,487,000 to 50,521,000 barrels during the week ended December 27, but the quantity left on hand was 7,620,000 barrels (17.8 percent) larger than that of 42,901,000 barrels reported a year previously. The East Coast accounted for 631,000 barrels of the withdrawal of the week, but the remaining inventory of 19,062,000 barrels was nearly 4,000,000 barrels larger than that held a year before. California took out 157,000 barrels but still held 2,500,000 barrels more than a year previously. The Texas Gulf Coast had a 112,000-barrel decrease and then held 500,000 barrels less than a year before. The Middle West has nearly a million barrels more than a year ago and Oklahoma-Kansas one half million barrels more.

Stocks of residual fuel oil in the United States were increased in the week of December 27 from 95,560,000 to 95,891,000 barrels, as the Texas Gulf Coast added 418,000 barrels and most other districts added smaller quantities, these additions having materially outweighed the withdrawals of 278,000 barrels on the East Coast and 90,000 barrels on the Louisiana Gulf Coast. Although stocks of the nation are about 6,000,000 barrels smaller than a year ago, those east of California are larger, storage in California being down 8,500,000 barrels. The East Coast shows a year-to-year increase of 1,256,000 barrels and the Illinois-Indiana area about the same gain, while small increases are indicated for the Appalachian district, Oklahoma - Kansas, the Texas Gulf Coast, and the Louisiana Gulf Coast.

Heating Oil Demand Good; Gasoline Market Firm

As for several weeks previously, quotations on petroleum products last week were generally unchanged, and markets were firm, as demand continued in line with prevailing near-peak refinery runs and with production of finished oils.

Shipments of gasoline were reported good, although there was a larger than normal addition of that product to storage in the week ended December 27.

That backing up of gasoline in storage reflected the abnormally large production during the week, rather than any appreciable letdown in consumption. It is apparent that gasoline consumption ultimately may be materially curtailed through rationing of tires and perhaps gasoline, but such shrinkage of demand is not indicated for the immediate future.

Colder weather finally has stimulated demand for heating oils, and the market was strengthened by a larger than normal withdrawal from storage during the week ended December 27. Supplies of No. 1 and No. 2 fuel oils were reported closely held in the East Coast district, most important consuming region of the country, despite the fact that stocks were materially larger than a year ago. In the Middle West, too, demand for heating oil was exceptionally good.

Lubricants were in good demand in

Trends of Operations and Changes in Stocks

Figures are from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines' basis, except those on crude stocks, which are from Bureau of Mines weekly reports.

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1939:						
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
August 5	[2]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[1]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[2]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
1940:						
January 27	3,611,600	3,470,000	237,339,000	87,914,000	27,407,000	103,015,000
February 24	3,732,100	3,490,000	240,836,000	96,719,000	25,390,000	103,419,000
March 30	3,841,250	3,585,000	250,561,000	101,370,000	23,778,000	105,081,000
April 20	3,858,550	3,535,000	254,881,000	[1]102,817,000	24,779,000	103,323,000
April 27	3,845,250	3,555,000	256,670,000	102,452,000	24,997,000	102,552,000
May 25	3,835,650	3,580,000	259,330,000	100,297,000	28,356,000	104,015,000
June 22	3,846,450	[2]3,690,000	260,891,000	97,276,000	32,751,000	104,683,000
June 29	3,639,550	3,625,000	262,059,000	95,142,000	33,590,000	104,486,000
July 27	3,690,400	3,555,000	262,579,000	90,173,000	38,981,000	105,924,000
August 31	3,501,350	3,575,000	265,865,000	85,393,000	44,766,000	108,774,000
September 28	3,799,950	3,600,000	263,609,000	82,273,000	47,986,000	108,450,000
October 26	3,640,300	3,565,000	262,746,000	80,891,000	48,893,000	108,475,000
November 9	3,584,200	3,510,000	261,631,000	[6]79,847,000	48,408,000	107,687,000
November 30	3,335,050	3,510,000	262,679,000	80,284,000	46,212,000	106,618,000
December 28	3,385,500	3,585,000	261,552,000	83,274,000	42,266,000	102,620,000
1941:						
January 25	3,599,100	3,625,000	260,093,000	88,762,000	39,039,000	100,297,000
February 22	3,629,650	3,590,000	261,783,000	95,812,000	34,381,000	98,631,000
March 29	3,746,550	3,625,000	266,187,000	[2]99,727,000	29,949,000	96,152,000
April 26	3,726,850	3,675,000	266,149,000	96,647,000	29,543,000	94,732,000
May 31	3,786,100	3,699,000	262,356,000	93,845,000	33,524,000	92,757,000
June 28	3,847,250	3,930,000	259,399,000	91,461,000	35,732,000	92,896,000
July 26	3,869,950	3,920,000	252,728,000	86,945,000	40,197,000	93,855,000
August 30	4,004,700	4,070,000	249,413,000	81,672,000	45,351,000	95,052,000
September 27	4,060,000	3,980,000	246,649,000	81,003,000	49,950,000	95,251,000
October 4	3,860,750	4,015,000	246,144,000	[6]80,870,000	49,553,000	96,016,000
October 18	4,110,550	[2]4,120,000	243,605,000	82,584,000	52,403,000	95,800,000
October 25	4,098,800	4,060,000	242,261,000	83,343,000	53,183,000	95,295,000
November 15	4,086,850	4,010,000	240,399,000	83,412,000	[2]54,983,000	95,993,000
November 22	[2]4,336,850	3,995,000	241,956,000	84,579,000	54,396,000	95,982,000
November 29	4,086,000	4,115,000	242,884,000	85,525,000	54,141,000	95,971,000
December 6	4,107,950	3,945,000	244,200,000	86,356,000	53,946,000	95,342,000
December 13	4,109,550	3,997,000	242,683,000	87,422,000	52,809,000	95,762,000
December 20	4,315,150	4,070,000	243,617,000	89,297,000	51,487,000	95,560,000
December 27, 1941	4,080,850	4,096,000	.....	91,479,000	50,521,000	95,891,000
December 27, 1940	3,385,500	3,582,000	[4]262,488,000	83,281,000	42,901,000	101,253,000
Amount of change in past year	+695,350	+514,000	—18,871,000	+8,198,000	+7,620,000	—5,362,000
Percent change in past year	+20.5	+14.3	—7.2	+9.8	+17.8	—5.3

[1] All time peak. [2] Peak for year. [3] Lowest since April, 1922. [4] Stocks, December 21, 1940.
[5] Lowest since October, 1922, due to shut down of six Mid-Continent states. [6] Lowest for year.
[7] Prior to April 29, 1939, data did not include stocks at terminals, in transit etc., except in California.

the Mid-Continent and in the Western Pennsylvania refining district, with supplies reported closely held in both regions. Bright stocks were especially sought in the East, and all lubricants were firm in the Oklahoma-Kansas market, although some refiners were said to be adding slightly to their stocks.

California and Kansas Cause Production Drop

United States crude oil production was cut back about 55,000 barrels daily in the week ended January 3, having averaged 4,046,450 barrels daily, compared with 4,101,700 the week before, THE OIL WEEKLY reported. The output was temporarily about 95,000 barrels under the market demand for domestic crude, as the national requirements were estimated by the Bureau of Mines at 4,139,000 barrels daily for December and 4,138,400 for January.

California Down

The most important change of the week was the decrease in California production to 589,000 barrels daily from 638,400 the week before, a reduction of about 50,000 barrels. Texas was up 12,000 barrels to 1,497,100 daily. Oklahoma was practically unchanged at 419,400 barrels per day. Illinois was down to 388,150 barrels from 392,700. Louisiana registered a 150-barrel increase to 360,450 barrels daily. Kansas declined about 14,000 barrels to 242,200 daily. New Mexico was off 200 barrels to 117,300.

API to Inaugurate Changes In Statistical Reports

Beginning with the week ending January 3, the American Petroleum Institute will inaugurate several changes in its weekly reports on crude oil production and refinery operations, and at least for several weeks, the reports will not be published until Wednesday, whereas they have been issued heretofore on Tuesday.

Henceforth, all figures by districts, as well as the United States totals in the refinery section of the report will be on a Bureau of Mines basis, containing estimates by districts of unreported stocks and refinery runs, whereas such unreported data heretofore have not been estimated except in the aggregate.

In the future reports, figures on crude production will cover more fields than heretofore in Texas, New Mexico, and Louisiana, and field names in Texas will be made to conform as nearly as possible to designations of the Texas Railroad Commission.

$400,000 Involved in Southwest Texas Deal

Wellington Oil Company of Delaware has turned its 12 leases and 5 producing wells in the Odem-Angelita area of San Patricio County to Calstar Oil Company of California, retaining an overriding royalty. As a further consideration Calstar assigned all of its interests in Southwest Texas held jointly with and operated by Wellington Oil Company to the latter concern. By virtue of the deal Wellington gained 25 wells, the interest being divided in more than 100 producers. Calstar in turn made a deal with the Seaboard Oil Corporation whereby the latter acquired the Odem area property for a consideration in excess of $400,000 in cash. This gives Seaboard 100 percent control of the field except one 80-acre lease held by The Atlantic Refining Company.

Gulf Gathering System at Sand Hills Operating

Gulf Refining Company made initial crude runs January 1 in the Sand Hills field, West Texas, through completion of its 18-mile 8-inch extension from Crane station. The Sand Hills gathering system operates by gravity, and involves 5 miles 8-inch; 23 miles 4-inch; and 6 miles 2-inch lines. Two 80,000-barrel tanks were erected in field and one at Crane station in order to segregate Permian and Ordovician crudes.

Refinery Hearings Will Be Closed to Public

Railroad Commissioner Jerry Sadler announced last week that names of oil companies conferring with the commission at confidential refinery hearings will not be disclosed to the public. The commission will receive data at those hearings upon which to determine needs for high octane gasoline and other petroleum products essential to national defense.

United States Crude Oil Production Lower

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (Dec.)	State Allowable (Barrels Daily in Dec.)	BARRELS DAILY FOR WEEK ENDED Dec. 27	Jan. 3
TEXAS:				
Texas Panhandle	.....	.....	87,800	88,500
North and West Central Texas	.....	.....	139,200	144,400
West Texas	.....	.....	292,200	293,100
East Central Texas	.....	.....	87,400	88,300
East Texas Field	.....	.....	369,400	369,200
South Texas	.....	.....	215,900	217,400
Texas Gulf Coast	.....	.....	293,300	296,200
Total Texas	1,479,700	1,500,760§	1,485,200	1,497,100
CALIFORNIA:				
Long Beach	.....	.....	39,000	37,700
Midway-Sunset	.....	.....	44,300	47,700
Kettleman Hills	.....	.....	32,400	30,100
Wilmington	.....	.....	84,500	80,300
Others	.....	.....	438,200	393,200
Total California	635,800	613,200*	638,400	589,000
OKLAHOMA:				
Oklahoma City	.....	.....	81,050	83,100
Seminole Area	.....	.....	111,250	110,100
Others	.....	.....	227,300	226,200
Total Oklahoma	460,000	428,000	419,600	419,400
ILLINOIS:				
Salem	.....	.....	67,550	67,500
Louden	.....	.....	61,500	57,600
Centralia	.....	.....	7,500	7,450
Other New Pools	.....	.....	224,450	243,900
Old Pools	.....	.....	11,650	11,700
Total Illinois	426,500	.....	392,700	388,150

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (Dec.)	State Allowable (Barrels Daily in Dec.)	BARRELS DAILY FOR WEEK ENDED Dec. 27	Jan. 3
LOUISIANA:				
North Louisiana	.....	.....	82,100	81,950
South Louisiana	.....	.....	278,200	278,500
Total Louisiana	340,000	354,705	360,300	360,450
KANSAS	260,700	264,000	256,600	242,200
NEW MEXICO	116,100	117,000	117,500	117,300
EASTERN STATES:				
Pennsylvania Grade	73,900	.....	76,050	73,200
Others, Eastern	23,000	.....	18,500	18,500
Total Eastern States	96,900	.....	94,550	91,700
MOUNTAIN STATES:				
Wyoming	81,900	.....	84,050	85,750
Montana	20,700	.....	22,400	22,300
Colorado	5,800	.....	5,250	5,300
Total Mountain States	108,400	.....	111,700	113,350
MICHIGAN	52,300	59,950†	52,850	56,900
INDIANA	19,700	.....	20,200	19,850
ARKANSAS	76,500	75,297	73,700	73,550
MISSISSIPPI	60,300	.....	73,100	71,950
NEBRASKA	6,100	.....	5,300	5,550
‡Total 8 Prorated States	3,421,100	3,412,912	3,404,150	3,355,900
Total United States	4,139,000	.....	4,101,700	4,046,450

* Recommendation of Conservation Committe of California Oil Producers.
† No definite state allowable fixed under prescribed regulations; figure shown here represents daily average production in 4 weeks ended November 22.
‡ Texas, California, Oklahoma, Louisiana, Kansas, New Mexico, Arkansas, Michigan.
§ Calculated daily average of actual production at beginning of month, allowing for under production of 3½ percent below net allowable, which was figured at 1,555,192 barrels daily as of December 1. However, allowable normally increases as new wells are completed, and consequently, actual daily average production for month may be expected to be slightly greater than average as calculated December 1. Under December order, most Texas fields were ordered shut down December 6, 7, 13, 14, 21, 25, 28 and 30.

GRAVITY-SCALE CRUDE OIL PRICES IN MID-CONTINENT FIELDS

Posted in most instances between May 19 and May 21, 1941

GRAVITY	Oklahoma-Kansas		North Louisiana-Arkansas					Inland Texas and New Mexico			South Texas		Texas Gulf Coast			Louisiana Gulf Coast						
	Stanolind, Gulf, Texas, Skelly, Barnsdall, Tidewater, Sinclair, Phillips	Carter, Magnolia, Shell	[1]Rodessa, etc.	[2]Champagnolle, etc.	Bunkie, Eola, Olla, (by Standard)	Lisbon, La. (by Gulf)	[3]Atlanta, Buckner, etc., Ark.	North and West Central Texas	[4]Eastern Texas	[5]West Texas, [17]Panhandle, New Mexico	[6]Refugio Type	[6]Mirando Type	[7]Gulf Coast	[8]Anahuac Type	[9]Dickinson Type	[10]Gulf Coast	[11]Standard of La.	[12]Texas Co.	[13]Texas Co.	[14]Magnolia Pet. Co.	[15]Shell Oil Co.	Jennings (by Gulf)	[16]Rocky Mt. Area (Salt Creek, etc.)
17-17.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	$0.94	....	....	....
18-18.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.96	....	....	....
19-19.9	....	....	....	....	....	....	....	....	$0.80	$0.70	$1.08	$1.03	$1.06	$0.98	$0.93	$1.06	....	....	....	.98	$0.99	....	....
20-20.9	$0.85	$0.75	....	....	....	....	$0.68	$0.81	.82	.72	1.10	1.05	1.08	1.00	.95	1.08	$0.90	....	....	1.00	1.01	....	....
21-21.9	.87	.78	....	....	....	....	.70	.83	.84	.74	1.12	1.07	1.10	1.02	.97	1.10	.92	....	....	1.02	1.03	....	....
22-22.9	.89	.81	....	....	....	....	.72	.85	.86	.76	1.14	1.09	1.12	1.04	.99	1.12	.94	....	....	1.05	1.05	....	....
23-23.9	.91	.84	....	....	....	....	.74	.87	.88	.78	1.16	1.11	1.14	1.06	1.01	1.14	.96	....	....	1.08	1.07	....	....
24-24.9	.93	.87	$0.88	$0.86	$0.98	....	.76	.89	.90	.80	1.18	1.13	1.16	1.08	1.03	1.16	.98	....	....	1.11	1.09	....	....
25-25.9	.95	.90	.90	.88	1.00	....	.78	.91	.92	.82	1.20	1.15	1.18	1.10	1.05	1.18	1.00	....	....	1.14	1.11	....	....
26-26.9	.97	.93	.92	.90	1.02	....	.80	.93	.99	.84	1.22	1.17	1.20	1.12	1.07	1.20	1.02	....	....	1.17	1.13	....	....
27-27.9	.99	.96	.94	.92	1.04	$0.81	.82	.95	1.01	.86	1.24	1.19	1.22	1.14	1.09	1.22	1.04	....	....	1.19	1.15	....	....
28-28.9	1.01	.99	.96	.94	1.06	.83	.84	.97	1.03	.88	1.26	1.21	1.24	1.16	1.11	1.24	1.06	$1.06	....	1.21	1.17	....	$0.96
29-29.9	1.03	1.02	.98	.96	1.08	.85	.86	.99	1.05	.90	1.28	1.23	1.26	1.18	1.13	1.26	1.08	1.08	....	1.23	1.19	....	.98
30-30.9	1.05	1.05	1.00	.98	1.10	.87	.88	1.01	1.07	.92	1.30	1.25	1.28	1.20	1.15	1.28	1.10	1.10	$1.05	1.25	1.21	....	1.00
31-31.9	1.07	1.07	1.02	1.00	1.12	.89	.90	1.03	1.09	.94	1.32	1.27	1.30	1.22	1.17	1.30	1.12	1.12	1.07	1.27	1.23	$1.07	1.02
32-32.9	1.09	1.09	1.04	1.02	1.14	.91	.92	1.05	1.11	.96	1.34	1.29	1.32	1.24	1.19	1.32	1.14	1.14	1.09	1.29	1.25	1.09	1.04
33-33.9	1.11	1.11	1.06	1.04	1.16	.93	.94	1.07	1.13	.98	1.36	1.31	1.34	1.26	1.21	1.34	1.16	1.16	1.11	1.31	1.27	1.11	1.06
34-34.9	1.13	1.13	1.08	1.06	1.18	.95	.96	1.09	1.15	1.00	1.38	1.33	1.36	1.28	1.23	1.36	1.18	1.18	1.13	1.33	1.29	1.13	1.08
35-35.9	1.15	1.15	1.10	1.08	1.20	.97	.98	1.11	1.17	1.02	1.40	1.35	1.38	1.30	1.25	1.38	1.20	1.20	1.15	....	....	1.15	1.10
36-36.9	1.17	1.17	1.12	1.10	1.22	....	1.00	1.13	1.19	1.04	1.42	1.37	1.40	1.32	1.27	1.40	1.22	1.22	1.17	....	....	1.17	1.12
37-37.9	1.19	1.19	1.14	1.12	1.24	....	1.02	1.15	1.21	1.06	1.44	1.39	1.42	1.34	1.29	1.42	1.24	....	1.19	....	....	1.19	1.14
37-38.9	1.21	1.21	1.16	1.14	1.26	....	1.04	1.17	1.23	1.08	1.46	1.41	1.44	1.36	1.31	1.44	1.25	....	1.21	....	....	1.21	1.16
39-39.9	1.23	1.23	1.18	1.16	1.28	....	1.06	1.19	1.25	1.10	1.48	1.43	1.46	1.38	1.33	1.46	1.28	....	1.23	....	....	1.23	1.18
40 & Up	1.25	1.25	1.20	1.18	1.30	....	1.08	1.21	1.27	1.12	1.50	1.45	1.48	1.40	1.35	1.48	1.30	....	1.25	....	....	1.25	1.20

[1] Gulf schedule for Caddo, Homer, Haynesville, Bull Bayou, Crichton, De Soto, El Dorado and Rodessa, Texas. Standard of La. schedule for Cotton Valley, Rodessa, Shreveport (Cross Lake), and Caddo. Magnolia schedule for Haynesville, Cotton Valley, Rodessa, and Miller Co., Ark. Texas Co. schedule for "North Louisiana."

[2] Schedule of Standard of La. for De Soto, Sabine, Fouke, Homer, Miller Co., Sugar Creek. Schedule of Root Petroleum Co. for Nick Springs, Urbana light, Schuler sweet, Rainbow, South Field (El Dorado), and Champagnolle.

[3] Schedule of Standard of La. for Atlanta, Buckner, Magnolia, Schuler; Jones sand, Village. Schedule of Root Petroleum Co. for Schuler: Reynolds lime, and Schuler: Jones sand.

[4] Humble schedule for Anderson, Cherokee, Limestone, and Navarro counties and Navarro Crossing field, except that prices from 80 to 92 cents represent postings only for Hawkins field, Wood County. Rodessa, Texas, prices are same as in Rodessa, La.-Ark.

[5] Schedule for Refugio, E. White Point, Greta, Melon Creek, Midway, Minnie Bock, O'Connor-McFaddin, Plymouth, Saxet, Taft, and Tom O'Connor.

[6] Schedule for Blanchard, Bridwell, Colorado, Comitas, Eagle Hill, Escoban, Fitzsimmons, Glen, Government Wells (N. and S.), Heyser, Hoffman, Kelsey, Kohler, Loma Novia, Lundell, Manila, Mirando Valley, Placedo, Randado, Sarnosa, and Tesoro.

[7] Humble schedule for Amelia, Clear Lake, Goose Creek, Hastings, Magnet, Mykawa, Mykawa new, Raccoon Bend, South Thompsons, Sugarland, Thompsons, Webster. Texas Co. schedule for Arriola, Ganado, Hamman, Hillje, Humble, Kubela, Magnet, Manvel, Markham, Mauritz, Old Ocean, Pickett Ridge, Port Neches, Sour Lake, West Columbia, Withers; except that schedule provides $1.36 top, 34 gravity. Pan American Prod. Co. schedule for Hastings and South Houston. Gulf schedule for Spindle Top, Sour Lake, Lovells Lake, West Beaumont, Goose Creek, South Liberty, Big Creek, Blue Ridge, Fannett, Moore, Barbers Hill, Hankamer, Thompsons, Lochridge, Dyersdale, and Hull (old) crudes. Sun schedule for Barbers Hill, Batson old, Cotton Lake, Esperson below 35 gravity, Goose Creek, Greens Lake, Hull below 25, Humble below 25, Nome, North Dayton below 25, Orange, Saratoga, Sour Lake, South Liberty.

[8] Humble schedule for Anahuac, Angleton, Cedar Point, Fishers' Reef, Hull old and new, Pierce Junction, Red Fish Reef, Turtle Bay fields. Sun schedule for Anahuac, Caplen, and Turtle Bay. Gulf schedule for Anahuac, Hull new, Pierce Junction, Orange and Thompsons deep.

[9] Humble schedule for Dickinson, Gillock, Hardin, League City, and Rowan fields. Pan American Prod. Co. schedule for Gillock crude.

[10] Sun Oil Co. schedule for Bayou Blue, Chacahoula, Fausse Pointe, Hackberry (E. and W.), and Vinton. Texas Co. schedule for Bay St. Elaine, Caillou Island, Iberia, Lake Barre, Lake Pelto, Leesville and Port Barre for crude ranging in gravity up to 27-27.9; for higher oils in those fields see Footnote 12. Gulf schedule for Edgerly, Starks, Vinton, E. Hackberry Cameron Meadows, Leesville. Deduct 10 cents for Gulf's prices for Timbalier Bay, Grand Bay, Quarantine Bay, and West Bay. Deduct 2 cents for Standard of La. prices for University (Baton Rouge) crude of 30 to 35.9 gravity.

[11] Standard of La. schedule for Bayou Mallet, Choctaw, Darrow, Jeanerette, Lirette, N. Crowley, S. Crowley, Port Barre, Potash, Roanoke, St. Martinville. Deduct 10 cents for Anse La Butte.

[12] Texas Co. schedule for Bateman Lake, Dog Lake, Fausse Point, Horseshoe Bayou, Jefferson Island, Plumb Bob, Vermilion Bay, West Cote Blanche, and Delta Duck Club. Add 8 cents to these prices for Texas Co. postings for 28 or higher gravity at Bay St. Elaine, Caillou Island, Iberia, Lake Pelto, Leesville, Port Barre, and Lake Barre.

[13] Texas Co. schedule for Delta Farms, Golden Meadows, Lake Salvador.

[14] Magnolia schedule for Lockport, Cameron Meadows, West Gueydan.

[15] Shell Oil Co. schedule at Iowa, Black Bayou, White Castle. For Shell's prices at Roanoke and Chalkley fields deduct 5 cents. For Shell's prices at Gibson, South Houma, Hester, and West Lake Verret fields deduct 10 cents.

[16] Sinclair-Wyoming Oil Co. prices at Salt Creek, Lost Soldier, Iron Creek, effective May 20, 1941. Deduct 10 cents for East Mahoney and deduct 20 cents for Mahoney and Wertz.

[17] Add 3 cents for Panhandle prices.

Mid-Continent Flat Prices

FIELD—	Flat Price	Date Posted
Arkansas:		
Big Creek, Dorcheat McKamie	$1.15	5-22-41
Smackover, Heavy	.83	5-22-41
Louisiana, North:		
Cotton Valley Distillate	1.30	5-22-41
Cotton Valley (Holloway Sand)	1.25	5-22-41
Lisbon Distillate	1.20	5-22-41
Louisiana, South:		
Erath	1.21	5-21-41
Garden Island	1.36	5-21-41
Happytown	1.15	5-20-41
Lafitte, Paradis	1.19	5-21-41
Lake Arthur & Tepetate	1.18	5-21-41
Lake Mongoulois	1.36	5-21-41
Ville Platte	1.20	5-21-41
Texas:		
Alice, Benavides (No. Sweden) Ben Bolt Clark-Muil, Sun and Tom Graham	1.35	5-21-41
Cayuga	.90	5-21-41
Clay Creek	1.00	5-22-41
Cleveland	1.26	5-21-41
Conroe	1.43	5-21-41
Darst Creek	1.14	5-21-41
Esperson 35 gravity and above and S. Esperson (Sun Oil Co.)	1.30	5-22-41
East Texas, Flag Lake	1.25	5-20-41
Flour Bluff, East Flour Bluff, and La Rosa	1.33	5-21-41
Hockley-Cochran Counties	.87	5-21-41
Livingston, Cleveland	1.25	5-20-41
Long Lake	1.23	5-21-41
Luling	1.05	5-21-41
Lytton Springs	1.17	5-21-41
North Rincon	1.35	5-22-41
Salt Flat, North Salt Flat, Darst Creek, Hilbig, Carroll, Clark, Zoboroski	1.14	5-21-41
Satsuma, Tomball	1.40	5-21-41
Sun Oil Co at Batson (new), Fig Ridge, Hardin, Hull 25 and above, Humble 35 and above, LaBelle, North Dayton 25 and above, Oyster Bayou, Seabreeze, South China, West Orange, and Willow Slough	1.25	5-22-41
South Cotton Lake	1.35	5-22-41
Sun	1.35	5-22-41
Talco	.79	5-21-41
Van	1.08	5-21-41
Yates (Deep)	.95	5-20-41
Yates (Shallow)	.82	5-20-41

Michigan Prices

Central (Basin):		
Porter, Greendale, Crystal, Wise, Midland, Vernon, Saginaw	$1.44	5-27-41
Buckeye, Edenville, Bentley, Beaverton, Monitor, Kawkawlin	1.42	5-27-41
Freeman, Lincoln, Sherman Redding, Temple, Winterfield	1.39	5-27-41
Hamilton-Grout	1.29	5-27-41
Adams	1.27	6- 1-41
Arenac, Clayton, Ogemaw, W. Branch	1.24	5-27-41
Southwest (Shallow):		
Traverse crude in Allegan, Kent, Ottawa, Van Buren Cos.	1.45	6- 2-41
Clare	1.11	5-27-41

Middle West Prices

FIELD—	Flat Price	Date Posted
Lima, Ohio	$1.17	5-28-41
Illinois Basin (Sohio Corp.)	1.37	5-19-41
Lake Centralia-Salem, Illinois	1.37	5-19-41
Eastern Ill.-Western Ind.	1.22	5-21-41
Western Kentucky	1.32	5-21-41
Birk City, Western Kentucky	1.32	5-21-41
Kentucky River, Eastern Ky.	1.43	6-19-41
Big Sandy River, Eastern Ky.	1.38	6-19-41

Rocky Mountain States Prices

Colorado:		
Canon City and Florence	$0.95	4- 1-41
Iles	.97	4- 1-41
Montana:		
Cat Creek	1.15	4- 1-41
Cut Bank	1.00	1- 1-40
Dry Creek	1.02	5-20-41
Sunburst	1.00	5-20-41
New Mexico:		
Artesia	.94	5-21-41
Hogback	1.00	10-11-38
Wyoming:		
Big Muddy	1.03	4- 1-41
Byron	.55	10-11-38
Elk Basin	1.00	5-21-41
Frannie, Light	.70	5-20-41
Frannie, Heavy	.47	5-20-41
Garland	.50	10-11-38
Grass Creek, Light	1.00	5- 1-41
Grass Creek, Heavy	.50	5-20-41
Hamilton Dome	.45	5-20-41
Lance Creek (Ohio Oil Co)	1.12	7- 1-41
Mill Creek	.72	10-11-38
Oregon Basin	.40	4-20-40
Osage	1.30	10-11-38
Poison Spider	.59	10-11-38
Rock River	1.15	5-21-41
Tensleep	.6515	2- 1-41

[*Continued on Next Page*]

Wholesale Prices of Refined Products in Principal Markets

REFINED GASOLINE	Current Range (Cents a Gal.)		Changes from Month Ago	
Oklahoma Refineries:				
60 Octane and Under	5¼	5⅝	...	...
63-66 Octane	5⅝	6	...	...
72-74 Octane	6	6⅜	...	...
80-82 Octane, Ethyl	6¾	7⅛	...	...
Mid-Western Tank Car:				
60 Octane and Under	5¼	5⅝	...	...
63-66 Octane	5⅝	6	...	...
72-74 Octane	6	6⅜	...	...
80-82 Octane, Ethyl	7⅛	7⅜	...	...
New York Harbor:				
68-70 Octane	8	8	...	...
72-74 Octane	8	8½	...	...
Min. 80 Octane, '39 Research	8½	9	...	...
Gulf Coast:				
60 Octane unleaded	5⅝	5⅝	...	...
65 Octane unleaded	5⅞	5⅞	...	...
68 Octane unleaded	6¼	6¼	...	...
70 Octane unleaded	6¼	6½	...	...
72-74 Octane leaded	6½	6½	...	...
Min. 80 Octane, '39 Research	6½	6½	...	...
NATURAL GASOLINE				
Grade 26-70:				
F.O.B. Group 3	5⅛	5⅛	...	...
F.O.B. Br'kenr'ge, Tex.	4¾	4¾	...	...
KEROSENE				
Oklahoma Refineries:				
41-43 water white	4¾	4¾	...	...
42-44 water white	4½	4⅞	...	...
Mid-Western Tank Car:				
41-43 water white	4¾	4¾	...	...
42-44 water white	4½	4⅞	...	...
New York Harbor	5⅝	5½	...	...
Gulf Coast:				
41-43 water white	4	4⅛	...	...
RANGE OIL				
At Oklahoma Refineries	4	4⅜	...	...
In Mid-Western Market Group 3, basis	4	4¼	...	...
LIGHT FUEL OILS				
Oklahoma Refineries:				
No. 1 prime white	3⅞	4¼	...	...
No. 1 straw	3½	4¼	...	...
No. 2 straw	3⅝	4⅛	...	...
No. 3	3½	3⅝	...	...
Mid-Western Tank Car:				
No. 1 prime white	3⅞	4⅛	...	...
No. 2 straw	3⅝	3¾	...	...
No. 3	3½	3¾	...	...
New York Harbor:				
No. 1	5⅝	5½	...	...
No. 2	5¼	5¼	...	...
No. 3	5¼	5¼	...	...
Gulf Coast:				
No. 2	4	4⅛	...	...

HEAVY FUELS	Current Range (Per Bbl.)		Changes from Month Ago	
Oklahoma Refineries:				
No. 6	$0.90	$0.90	...	...
14-16 Gravity	.95	.95	...	...
Mid-Western Tank Car:				
No. 5	.85	.85	...	...
No. 6	.85	.87½	...	...
New York Harbor:				
No. 5	1.65	1.75	...	...
No. 6	1.35	1.45	...	—.05
BUNKER C FUEL OIL (Per barrel, ships' bunkers)				
Gulf Coast	$0.85	$0.95	...	...
New York Harbor	1.35	1.45	...	—.05
DIESEL OIL (Per barrel, ships' bunkers)				
Gulf Coast	$1.65	$1.80	...	...
New York Harbor	2.15	2.15	...	...
LUBRICATING OIL (Cents a gal.)				
Oklahoma Refineries:				
Bright stock (viscosity at 210°):				
200 vis. D, 10-25 pour point	27	27	...	...
150-160 vis. D:				
0-10 pour point	23	23½	...	...
10-25 pour point	22½	23	...	...
25-40 pour point	23	23	...	...
150-160 vis. E	22	22½	...	...
120 vis. D, 0-10 pour point	22	22½	...	...
600 s.r. dark green	9	9½	...	...
600 s.r. olive green	10	11	...	...
631 s.r.	18½	18½	...	...
Neutral Oils (viscosity at 100°, 0-10 pour point):				
Pale Oils:				
60-85 vis. No. 2 color	8	8½	...	...
86-110 vis. No. 2 color	8½	8°	...	...
150 vis. No. 3 color	14½	14½	...	...
180 vis. No. 3 color	15	15	...	...
200 vis. No. 3 color	15	15½	...	...
250 vis. No. 3 color	16½	16½	...	...
280 vis. No. 3 color	17	17½	...	...
300 vis. No. 3 color	18	18½	...	...
Red Oils:				
180 vis. No. 5 color	15	15	...	...
200 vis. No. 5 color	15	15½	...	...
280 vis. No. 5 color	17½	17½	...	...
300 vis. No. 5 color	17½	18½	...	...
Western Pennsylvania:				
Cylinder Stocks:				
600 s.r. filtrabile	15	16	...	...
650 s.r.	15½	16½	...	...
600 flash	16	17	...	...
630 flash	17	17½	...	...

LUBRICATING OIL (Cents a gal.)			Changes from Month Ago	
Bright Stock (No. 8 Color, vis. at 70):				
210, 540-550 fl.):				
10 pour test	30½	30½	...	...
15 pour test	29½	29½	...	...
25 pour test	25	26	...	...
Viscos Neutrals (No. 8 Color, vis. at 70):				
200 (180 at 100), 420-425 fl.:				
Zero pour test	40½	40½	...	...
10 pour test	39½	39½	...	...
15 pour test	38½	38½	...	...
25 pour test	33	33	...	...
150 (143 at 100), 400-405 fl.:				
Zero pour test	38½	38½	...	...
10 pour test	37½	37½	...	...
15 pour test	36½	36½	...	...
25 pour test	31	31	...	...

Eastern States Crude Oil Prices

FIELD—	Flat Price	Date Posted
Bradford-Allegany	$2.75	8-25-41
Sw. Pa. Pipe Line	2.40	8-25-41
Eureka Pipe Line, W. Va.	2.34	8-25-41
Corning Grade, Ohio	1.31	5-27-41
Buckeye Crude, Ohio	2.30	6-18-41

Major Crude Oil Price Changes

	Penna. Grade	Mid-Cont. (36 Gr.)	Calif. (26 Gr.)
Jan. 1, 1940	Up 25	.....	.....
Feb. 1, 1940	.....	.....	Cut *7
May 22, 1940	Cut 25	.....	.....
June 18, 1940	Cut 25	.....	.....
July 12, 1940	Cut 25	.....	.....
Aug. 28, 1940	Cut 15	.....	.....
Nov. 12, 1940	Up 15	.....	.....
Dec. 17, 1940	Up 15	.....	.....
Jan. 27, 1941	Up 15	.....	.....
April 1, 1941	.....	Up 5	.....
April 23, 1941	Up 10	.....	.....
April 24, 1941	.....	.....	Up *6
May 19, 1941	.....	Up 10	.....
May 21, 1941	Up 15	.....	.....
May 22, 1941	.....	.....	Up *6
June 18, 1941	Up 20	.....	.....
Aug. 14, 1941	Up 23	.....	.....
Aug. 25, 1941	Cut 23	.....	.....

* Signal Hill 26 gravity.

CRUDE OIL PRICES IN CALIFORNIA

Prices per barrel in field, posted by Standard Oil Company of California, effective May 23, 1941
All gravities above those quoted take highest price offered in that field

Gravity	Signal Hill (Long Beach)	Wilmington	El Segundo	Seal Beach	Huntington Beach	Inglewood	Playa del Rey	Olinda, Brea Canon	Athens-Rosecrans	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Newhall, Kern River, Kern Front, McKittrick, Round Mountain	Greeley, Canal, Wasco	Coles Levee	Mountain View	Elk Hills, Buena Vista Hills, Midway-Sunset Lakeview Area	Lost Hills	Coalinga	Kettleman Hills	Elwood Terrace
14-14.9	.....	$0.68	.....	.....	$0.71	.....	.....	$0.70	.....	$0.70	$0.70	$0.70	$0.72	.....	.....	$0.73	.....	.....	.....	$0.73	$0.73	$0.73	.....	.....
15-15.9	.....	.71	.....	.....	.75	$0.76	.....	.72	.....	.72	.71	.72	.72	.....	.....		.....	.....	.....	.73	.73	.73	.....	.....
16-16.9	.....	.74	$0.79	.....	.79	.79	.....	.75	.....	.74	.73	.75	.72	.....	.....		.....	.....	.....	.73	.75	.73	.....	.....
17-17.9	.....	.78	.82	.....	.82	.82	.....	.78	.....	.77	.76	.78	.72	.....	.....		.....	.....	.....	.75	.78	.73	.....	.....
18-18.9	$0.80	.82	.86	.....	.86	.85	.....	.81	.....	.80	.79	.82	.74	.....	.....		.....	.....	.....	.78	.81	.73	.....	.....
19-19.9	.84	.86	.90	.....	.89	.88	.....	.85	.....	.83	.82	.85	.77	.....	.....	Wheeler Ridge	.....	.....	$0.73	.81	.84	.75	.....	.....
20-20.9	.88	.90	.94	.....	.93	.92	$0.80	.88	.....	.86	.85	.89	.80	.....	.....		.....	.....	.76	.85	.87	.77	.....	.....
21-21.9	.92	.94	.98	.....	.96	.95	.84	.91	.....	.89	.89	.92	.84	.....	.....		.....	.....	.79	.90	.90	.80	.....	.....
22-22.9	.96	.98	1.02	$0.88	.99	.98	.87	.95	.....	.93	.93	.96	.87	.....	.....	$0.76	.....	.....	.83	.94	.93	.83	.....	.....
23-23.9	1.00	1.02	1.05	.92	1.02	1.01	.....	.98	.....	.97	.98	1.00	.91	.....	.....	.80	.....	.....	.87	.99	.96	.86	.....	.....
24-24.9	1.03	1.06	1.07	.97	1.05	1.04	F.O.B.	1.01	.....	1.01	1.02	1.03	.94	$0.99	.....	.83	.....	.....	.90	1.03	.99	.89	.....	.....
25-25.9	1.07	1.09	1.10	1.01	1.08	1.07	Our	1.04	.....	1.05	1.06	1.07	.98	1.02	.....		.....	.....	.94	1.07	1.01	.92	.....	.....
26-26.9	1.11	1.12	1.12	1.06	1.11	1.10	Pipe	1.08	.....	1.09	1.10	1.11	1.01	1.06	.....		.....	.....	.97	1.11	1.04	.95	.....	.....
27-27.9	1.15	1.15	1.15	1.10	1.14	1.14	Line	1.11	.....	1.13	.....	1.15	1.05	1.10	$1.04	.....	.....	.....	1.01	1.15	1.07	.98	.....	.....
28-28.9	1.18	1.18	1.17	1.15	1.17	1.17	.....	1.14	.....	1.17	.....	.....	1.08	1.13	1.08	.....	.....	.....	1.04	1.19	1.10	1.00	.....	.....
29-29.9	1.20	1.21	.....	1.19	1.20	1.20	.....	.....	$1.17	.....	.....	.....	1.12	1.17	1.12	.....	.....	.....	1.07	1.24	1.13	1.02	.....	.....
30-30.9	1.23	1.24	.....	.....	1.23	1.22	.....	.....	1.21	.....	.....	.....	1.15	1.21	1.15	.....	$1.01	$1.09	1.10	1.28	1.16	1.04	.....	F.O.B.
31-31.9	.....	.....	.....	.....	.....	1.24	.....	.....	1.25	.....	.....	.....	1.19	1.24	1.19	.....	1.04	1.12	1.14	.....	.....	1.06	.....	Ship
32-32.9	.....	.....	.....	.....	.....	.....	.....	.....	1.29	.....	.....	.....	1.23	1.28	1.23	.....	1.07	1.14	1.17	.....	.....	1.09	.....	.....
33-33.9	.....	.....	.....	.....	.....	.....	.....	.....	1.32	.....	.....	.....	1.27	.....	1.26	.....	1.10	1.17	.....	.....	.....	1.11	.....	$1.22
34-34.9	.....	.....	.....	.....	.....	.....	.....	.....	1.36	.....	.....	.....	1.31	.....	1.30	.....	1.13	1.20	.....	.....	.....	1.13	.....	1.25
35-35.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.35	.....	.....	.....	1.16	1.22	.....	.....	.....	.....	$1.23	1.28
36-36.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.39	.....	.....	.....	1.19	1.25	.....	.....	.....	.....	1.26	.....
37-37.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.43	.....	.....	.....	1.22	.....	.....	.....	.....	.....	1.29	.....
38-38.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.47	.....	.....	.....	1.25	.....	.....	.....	.....	.....	.....	.....
39-39.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.51	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
40-40.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.53	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

U. S. FIELD OPERATIONS

Illinois

Activity Lulls Following Number of Wildcat Failures

Activity in lull following abandonment of several important wildcats; cable tools being rigged up to drill plug at Richland County wildcat.

Richland County: Benedum - Trees' L. J. Powell 1, E½ NW SE 10-3n-10e, half mile south of Olney, moving in cable tools to drill plug and test McClosky lime at 3146-52; a successful completion probably will mean at least one townsite test in Olney.

COMPLETIONS

BOND COUNTY—Charles Measley's Bly 1, nw nw nw nw 22-4n-4w, abnd 845 ft.

CLARK COUNTY: Wildcat—Swan-King Oil's Claypool 1, sw ne se 1-9n-14w, abnd 1687 ft.

CLAY COUNTY—W. C. McBride's Palmer 2, w½ se ne se 34-4n-7e, Cypress 2600-12 ft, 2612 td, 82 bbls oil.

EDWARDS COUNTY—Central P. L. et al's Kent Comm. 2, w½ se ne 31-2n-14w, McClos. 3118-3128 ft, 1270 bbls oil, td 3128 ft. A. F. Dye's Kent 3, sw nw sw 32-2n-14w, McClos. 3099-3114 ft, pb td 3117 ft, 1080 bbls oil. Tide Water's Provident Mutual 1, e½ ne se 13-1s-10e, McClos. 3184-93 ft, td 3205 ft, 86 bbls oil, 210 bbls water.

FAYETTE COUNTY—Carter's Giles-Miller 2, ne se ne 1-8n-3e, Weiler 1530-43 ft, td 1543 ft, 72 bbls oil; Sloan 3-D, c nw nw 11-8n-3e, Dev. 3129-34 ft, td 3134 ft, 103 bbls oil; Hogan 5-D, nw nw 27-8n-3e, Dev. 3100-01 ft, td 3101 ft, 103 bbls oil; Buzzard 2, ne nw sw 35-9n-3e, abnd 1544 ft. L. B. Hoss et al's Knecht 1, ne se ne 36-5n-1e, abnd 2060 ft.

FRANKLIN COUNTY—Menhall's Rea 1, nw se ne 26-6s-2e, Tar Springs 2102-24 ft, td 2124 ft, 210 bbls oil.

Adkins' CW&F Coal Co. W 3 s½ se nw se 36-6s-2e, abnd 2930 ft.

Adkins et al's McKemie "A" 5, nw sw nw nw 30-6s-3e, Tar Springs 2150-71 ft, td 2171 ft, 78 bbls oil.

GALLATIN COUNTY: Wildcat — Carter's Whipple 1, sw se se 21-7s-8e, abnd 3120 ft.

HAMILTON COUNTY—Sun Oil's Gideon Moss 1, sw nw ne 12-6s-5e, abnd 3419 ft.

Shell's Ventress 4, se sw se 12-6s-5e, A. V. 3060-3102 ft, L. O'H. 3146-63 ft, td 3267 ft, 875 bbls; Anderson 1, ne ne nw 13-6s-5e, A. V. 3118-3153 ft, O'Hara 3205-3218 ft, pb 3252 ft, td 3380 ft, 212 bbls; Lockwood "B" 1 ne ne sw 13-6s-5e, A. V. 3117-3152 ft, O'Hara 3202-20 ft, McClos. 3296-3307 ft, td 3310 ft, est 1110 bbls; Lockwood 2, nw nw nw 13-6s-5e, A. V. 3171-3198 ft, McClos. 3212-3226 ft & 3246-60 ft, td 3427 ft, pb 3388 ft, 391 bbls; Lockwood 4, se nw nw 13-6s-5e, A. V. 3174-3196 ft, td 3366 ft, 196 bbls; Crabtree 3, sw ne se 14-6s-5e, L. O'Hara 3188-3212 ft, 3296-3306 ft, td 3364 ft, 337 bbls; Flannigan 1, nw sw ne 14-6s-5e, L. O'Hara 3244-3265 ft, A. F. 3168-3202 ft, td 3440 ft, pb 3270 ft, 494 bbls; Trustees of Schools Comm. 1, nw se se 14-6s-5e, A. V. 3092-3112 ft, O'Hara 3154-3168 ft, td 3312 ft, 469 bbls.

Texas' Lockwood 5, nw sw se 13-6s-5e, A. V. 3094-3138 ft, O'Hara 3188-3198 ft, McClos. 3270-77 ft, 3283-91 ft & 3320-23 ft, td 3348 ft, 663 bbls; E. Smith 2, se ne ne 13-6s-5e, A. V. 3137-70 ft, McClos. 3220-3234 ft, td 3350 ft, 616 bbls; McGill 2, w½ ne sw 27-6s-6e, A. V. 3062-3098 ft, td 3098 ft, 117 bbls; Johnson 11, nw nw nw 18-6s-7e, A. V. 3051-75 ft, td 3075 ft, 742 bbls; Shavitz 2, w½ sw ne 27-6s-6e, A. V. 3059-97 ft, td 3097 ft, 178 bbls.

Reward et al's Lockwood 4, sw nw nw 23-6s-5e, abnd 3309 ft.

Pure's Kimmery-Mayberry 4, ne se se 7-6s-7e, A. V. 2983-3023 ft, td 3040 ft, 1149 bbls.

Ohio's Hall 1, nw nw sw 8-6s-7e, A. V. 3001-07, 3010-14 ft, td 3014 ft, 108 bbls.

Kewanee O&G's Culpepper 4, nw sw se 14-6s-5e, McClos. 3166-84 ft, abnd 3222 ft.

JASPER COUNTY—Pure's Roberts Cons "A" 2, e½ nw ne 4-5n-10e, McClos. 2807-15 ft, 2823-2826 ft, 2838-2842 ft, td 2843 ft, 124 bbls; J. W. Honey "A" 4, w½ ne ne 17-5n-10e, McClos. 2790-97 ft, 2802-2805 ft, td 2830 ft, 207 bbls; Adams 5, e½ sw ne 20-5n-10e, McClos. 2794-97 ft, 2803-2805 ft, 2810-12 ft, td 2825 ft, 152 bbls; Elliot 2, e½ sw sw 29-5n-10e, McClos. 2850-53 ft, 2855-2862 ft, td 2880 ft, 40 bbls; Ross 3, sw ne se 5-6n-10e, abnd 2780 ft; May 4, nw nw se 8-6n-10e, McClos. 2798-2800 ft, td 2850 ft, 115 bbls.

Texas & Gulf's Hines Comm. 1-A, n½ nw nw 9-5n-10e, McClos. 2742-46 ft, 2760-2764 ft, 2768-72 ft, td 2815 ft, 81 bbls.

Texas' Jourdan 5, se se nw 8-6n-10e, McClos. 2802-60 ft, td 2860 ft, 50 bbls.

JEFFERSON COUNTY—Carter's Cobb 2, ne nw sw 10-1s-2e, Bethel 1948-56 ft, td 1960 ft, 138 bbls.

Baldwin et al's McNeil 1, nw nw nw 32-2s-1e, abnd 2123 ft.

Mid Sun Oil Corp.'s Adams 1, n½ ne nw 14-2s-3e, abnd 2943 ft.

Magnolia's Oslager Unit 1, se sw nw 1-3s-1e, Bethel 1923-55 ft, td 1955 ft, 218 bbls.

Texas' Robinson 1, nw sw nw ne 1-3s-1e, Bethel 2000-13 ft, td 2013 ft, 14 bbls.

LAWRENCE COUNTY—Alford Pet.'s Gutteridge 4, se sw ne nw 29-3n-12w, Bethel 1896-1922 ft, td 1925 ft, 35 bbls.

Great Central Oil's Patton 1, ne nw nw 34-3n-12w, McClos. 1891-1898 ft, td 2202 ft, 21 bbls.

Geo. Herbst's Lemons 2, sw ne sw nw 7-4n-10w, abnd 1593 ft.

RICHLAND COUNTY: Wildcat—Ohio's Hull 1, w½ nw ne 20-2n-14w, McClos. 3139-3142 ft and 3146-3153 ft, td 3162 ft, pump 30 bbls oil and 40 bbls water.

SALINE COUNTY: Wildcat—R. Hal Compton's Durham 1, se se ne 30-7s-6e, abnd 3385 ft.

Magnolia's Molinarolo 1, se nw ne 8-8s-7e, A. V. 2880-98 ft, td 3144 ft, pb 2920 ft, 13 bbls oil.

WABASH COUNTY—Harry Fotiades' Fox 1, sw nw ne 27-1n-12w, abnd 2314 ft.

Dean & Morton's Hein 2, ne ne se nw 21-1s-12w, Cypress 1976-1997 ft, td 1976 ft, 164 bbls.

WAYNE COUNTY—Ohio Fuel Supply's Hill 1, sw ne nw ne 4-1s-6e, McClos. 3186 ft, td 3194 ft, 627 bbls.

Swan-King's Spencer 1, w½ se ne 28-1s-6e, McClos. 3167-72 ft, 3196-98 ft, td 3219 ft, 210 bbls oil.

Bell Bros.' Fuhrer 3, c e½ sw nw 33-1s-6e, A. V. 3024-42 ft, td 3044 ft, 256 bbls.

Gulf's Garrison 1, s½ sw se 21-1n-6e, A. V. 3046-56 ft, L. O'Hara 3114-17 ft, McClos. 3186-3200 ft, td 3235 ft, 27 bbls.

Texas' Wilson 2, n½ ne se 22-1n-6e, McClos. 3146-53 & 3155-57 ft, td 3165 ft, 111 bbls; Haught Comm. 1-A s½ nw ne 28-1n-6e, McClos. 3191-3195 ft, 3232 ft td, 559 bbls.

Illinois Prod. Co.'s Ray 1, s½ sw ne 26-1n-6e, McClos. 3155-65 ft, td 3185 ft, 200 bbls.

Ohio's Wells B 1 s½ se se 26-1n-6e, McClos. 3178-83 ft, td 3183 ft, 86 bbls.

United Prod.'s Schell 7, e½ se ne 34-1n-6e, abnd 3030 ft.

Deep Rock Oil's Porter 2, e½ ne se 36-1n-6e, McClos. 3197-3203 ft, 3220-3230 ft, td 3330 ft, pb 3268 ft, 65 bbls.

WHITE COUNTY—Hudson-Hess' Poorman 5, sw sw ne 30-3s-8e, A. V. 3191-3235 ft, td 3235 ft, 252 bbls oil.

Calstar Pet.'s Miller-Ford 28-C, sw sw sw 22-4s-14w, A. V. 2835-52 ft, td 2959 ft, 146 bbls.

Longhorn's Helm 22, e½ ne nw ne 27-3s-14w, Tar Springs 2167-74 ft, td 2174 ft, 140 bbls.

S. C. Yingling's Andres 1, se ne ne 32-3s-14w, A. V. 2866-2883 ft, td 2942 ft, pb 2884 ft, 65 bbls.

First Nat. Pet. Trust's Bump 7, se nw nw 33-3s-14w, McClos. 2948-2956 ft, td 2956 ft, 320 bbls.

Superior's Dennis 1, sw nw ne 23-4s-14w, abnd 2980 ft; Fitton A 26, se se se 29-4s-14w, Bethel 2720-39 ft, td 2859 ft, pb 2740 ft, 70 bbls; Greathouse 10, sw ne ne 4-5s-14w, Bethel 2714-32 ft, A. V. 2828-2838 ft, td 2853 ft, 50 bbls.

Reese & Heath's Shumaker 1, sw nw sw 23-4s-9e, abnd 3356 ft.

H. A. Brisch's Henson 1, sw se se 14-6s-8e, abnd 2850 ft.

Carter's Leathers 1, ne ne ne 11-7s-8e, Walters sd 2160-77 ft, 2721-2747 ft, td 2751 ft, 244 bbls; Van McGill 2, ne se ne 15-7s-8e, Walters 2180-2186 ft, 2928-34 ft, 2938-51 ft, td 2957 ft, 40 bbls.

Gulf's Moore 1, sw sw nw 12-7s-8e, A. V. 2879-97 ft, PT. Crk. 2722-42 ft, Cyp. 2568-78 ft, Walt. 2185-95 ft, td 3020 ft, 50 bbls.

Hiawatha Oil Co.'s Stinson 8, se ne ne 19-7s-11e, Weiler sd 2455-2458 ft, td 2880 ft, pb 2463 ft, 10 bbls.

OLD WELLS DEEPENED

LAWRENCE COUNTY—Chet Everts' Catt 2 se se sw 23-2n-12w, Biehl 1385-1420 ft, Buchanan 1299 ft, td 1317 ft, 79 bbls.

MARION COUNTY—Geo. Herbst's Lemons 2, sw ne sw nw 7-4n-10w, abnd 1593 ft.

WILDCAT STARTS

CLARK COUNTY—T. C. McDaniel's Howard 1, sw nw sw 36-10n-14w, dr.

FAYETTE COUNTY—Ryan Oil Co. et al's Tocheck 1, nw sw se 20-5n-2e, dr.

JEFFERSON COUNTY—S. P. Lalor's Rynski 1, ne ne sw 34-2s-1e, lcn. Kennedy & Gilbert's Dunavon 1, sw nw se 1-4s-2e, dr. National Pet. Co.'s Fitzgerald 1, se ne se 32-4s-3e, dr.

WAYNE COUNTY—I. A. O'Shaughnessy's Withrow 1, n½ ne nw 21-1s-6e, lcn. Wiser Oil Co.'s Ellis 1, e½ se ne 32-1n-5e, dr.

WHITE COUNTY—Cherry & Kidd's Pearce 1, ne se ne 35-6s-10e, lcn.

Summary of Drilling Operations in the United States, Week Ended January 3, 1942

	WELLS COMPLETED						
	Completions	Oil Wells	Gas Wells	Failures	[1]Miscellaneous	Total 1942	Total this Date 1941
Arkansas	....	....	....	....	....	....	2
California	12	12	....	....	....	12	23
Illinois	79	59	....	18	2	79	59
Indiana	10	5	2	3	....	10	7
Kansas	58	31	2	25	....	58	38
Kentucky	5	3	....	2	....	5	6
Louisiana	14	9	....	5	....	14	19
Michigan	26	16	5	5	....	26	18
Mississippi	....	....	....	....	....	....	3
Missouri	....	....	....	....	....	....	1
Montana	4	4	....	....	....	4	3
New Mexico	1	....	....	....	1	1	5
New York	35	20	....	....	15	35	8
Ohio	65	15	25	20	5	65	26
Oklahoma	50	24	4	17	5	50	42
Pennsylvania	8	....	8	....	....	8	57
Texas	116	93	4	18	1	116	84
W. Virginia	35	5	18	4	8	35	14
Wyoming	1	1	....	....	....	1	....
Total this week	519	297	68	118	36	519	415
Total last week	534	342	43	121	28	....	....
Total this year	519	297	68	118	36	....	....

[1] Includes old wells deepened, water-intake, gas input, and salt water disposal wells.

Indiana

Mt. Vernon Well Will Test at Two Levels

Four miles northeast of New Harmony, K. B. Yost and Burr Lambert have derrick up for Fred Pfister 1, new wildcat start C N ½ NE SW 23-4s-13w, Posey County. In the Mt. Vernon pool, Carter Oil Co. and Gulf Refining Co. were reaming out malleable casing opposite Waltersburg sand at 1990-2000 ft in Hart 1, NE NW SW 1-7s-14w. Following Waltersburg test, Cypress pay also will be tested. Whipstocking to drill ahead at about 1435 ft was Sun Oil Co.'s Leonard 1, SW NE NW 21-8s-14w, projected half-mile south extension to the Neidrst (Oakland City College) pool of Point Township.

COMPLETIONS

DAVIESS COUNTY—Geo. Shumos' Singleton 1, ne sw sw 21-2w-7w, Cypress 920-924 ft, td 924 ft, 25 bbls.

GIBBONS COUNTY—Continental's Bozeman Ld. Co. 55, ne ne ne 26-3s-14w, Tar Springs 2100-2126 ft, td 2126 ft, 170 bbls.

JASPER COUNTY: Wildcat—Nat. Pet. Co.'s Rose 1, se se nw 4-29n-5w, abnd 908 ft.

POSEY COUNTY—Continental's Kleiderer 4, w½ ne sw nw 35-3s-14w, abnd, td 2594 ft.

Central States et al's Hermsen 1, nw se nw 30-6s-12w, Stray sand 980-1001 ft, td 1001 ft, 35 bbls; Seifert 2-C, sw ne nw nw 30-6s-12w, sand 335-385 ft, td 385 ft, 250,000 gas.

RANDOLPH COUNTY—Union Port O&G's Slack 1, w½ w½ e½ ne 9-19n-13e, Trenton 1042-1088 ft, td 1088 ft, 70,000 gas.

SPENCER COUNTY—L. L. Benoist's Abbot 3, sw ne nw 7-7s-7w, Walters 1005½-1031 ft, td 1031 ft, 125 bbls.

Cherry, Kidd et al's Lake 1, se sw ne 33-5s-5w, abnd 1237 ft.

VANDERBURG COUNTY—Paul F. Osborne's Edmond 1, se sw nw 16-7s-11w, Walters 1647-55½ ft, td 2562 ft, pump 34 bbls.

WILDCAT STARTS

BENTON COUNTY—D. P. Hynes et al's Atkinson 1, nw nw nw 3-25n-7w, lcn.

GIBSON COUNTY—Dickerson et al's Stunkle 1, c s½ se se 11-3s-13w, lcn.

Kentucky

New Field Opened in Webster County, Kentucky

In Webster County, mile northwest of Tilton, Tid Tilden, Sun Oil Co. and Kentucky Natural Gas Co. opened a new pool with T. J. Tapp 1, 13-N-22, which pumped initially 22 barrels in 17 hours from tentatively unidentified sand at 928-933 feet.

COMPLETIONS

DAVIESS COUNTY—Andrew Teller's Lebold 7, 13-N-28, Tar Springs 1251-1290 ft, td 1292 ft, 100 bbls.

Walter Sargent et al's Hagan 1 (2), 11-P-27, Palestine ss 1024-38½ ft, td 1038½ ft, pump 40 bbls.

MUHLENBERG COUNTY: Wildcat—Burton et al's Jenkins 1, 23-H-29, abnd 365 ft.

UNION COUNTY—Ohio's Briscoe 2, 20-O-18, Manfield 1320-1336 ft, td 1336 ft, 15 bbls.

Sun's Samples 1, 21-P-19, abnd 2625 ft.

Nebraska

Seventh Producer Extends Barada Pool North

Seventh producer for new Barada pool extends area to north; Ohio starting new Falls City test; east edge well of field shows saturation.

Barada Pool: Skelly Oil Co.'s Roesch 5, CW½ NW NW 36-3n-16e, Richardson County, test topped the Hunton lime at 2385 ft, drilled to 2405 ft, and the hole filled to the top with oil in 20 hrs, operator now testing; operator's southernmost test, Zimmerman 1, CW½ SE SW Sec 36, topped Hunton lime at 2454 ft, running 82 ft low to north offset, pipe set 2508 ft, waiting; operator's Roesch 6, CE½ NW SW, Sec 36, new start, offsetting Roesch 4, producer, to the west.

Falls City Pool: Towle and Isaacks' Sibbernsen 1, SWc SE 17-1n-16e, east edge of field, topped Hunton lime at 2273 ft, cored some saturation, running casing. Ohio Oil Co.'s Sandrock 8, NW SW NW 20-1n-16e, moving in rig.

Dawson Pool: A. H. Kruger et al's Ogle 1, CE½ NE SE 9-1n-14e, Richardson County, drilling at 2040 ft.

Iowa

WILDCAT STARTS

FREMONT COUNTY—Big Indian Oil & Dev.. Kilpatrick 1, ne nw ne 4-70n-41w, lcn.

Oklahoma

Two Extension Producers For New Apache Field

Western flank of Chickasha gas field defined by dry hole; two extensions for Apache field, Oklahoma's major 1941 discovery; new pool looming for Seminole County.

Grady County: Mid-Continent Petroleum Co.'s Nicks 1, C NW NW 27-5n-8w, defines Charlson sand zone, major producing formation of Chickasha field, test drilled to 6500 ft in the Charlson which was reported nearly 1000 ft low, perforated both upper and lower sands with no shows, now plugged back to test shallower gas pay at 4900 ft.

Caddo County: Sinclair Prairie Oil Co.'s Lewis 2, NE SE SW 2-5n-12w, extended Apache field one location south as ninth producer for the field, well drilled to 3795 ft in Wilcox sand topped at 3661 ft, lowest, structurally, in the field, washed in well flowed 504 bbls oil in first hr through casing, then flowed 205 bbls second hr and 195 bbls third hr through tubing before being shut in for tankage. Texas Co.'s Mulkahay 2, NE NW SE 2-5n-12w, extended field location east, well drilled to 3791 ft in Wilcox sand topped at 3658 ft, washed in and made less than 30 bbls oil per hr and was completed for the smallest well in the field to date; operator's Smith 7, SW SW NW Sec 2, drilled to 3485 ft on top of sand, set 7-in there and was drilling plug.

Seminole County: Donmar Oil Co.'s Ashby 1, NWc 32-8n-6e, west of Little River area, may open new pool, well topped Wilcox sand at 4420 ft, 2-ft core showed some oil stains, coring ahead, test topped Viola lime 100 ft high to nearby dry hole and cut out the Hunton lime zone entirely.

COMPLETIONS

CADDO COUNTY: Cement—Ohio's Wagner Acct. 2, 95 ft n of se nw sw 12-5n-9w, Wade Sand 3902-98 ft, perf casing swabbed 466.44 bbls, td 4021 ft.

CARTER COUNTY—Wildcat: Cary & Norbury's Kern 1, se sw ne se 20-3s-1w, Lime 3115-19 ft, td 3516 ft, dry.

West Hewitt—S&D Daube's Merrick 3, nw c sw 20-4s-2w, sand & shale 2232 ft, 2242 ft, td 2272 ft, pump 197.76 bbls; Gibson & Jennings' Griffin 9, sw se se 20-4s-2w, sand 2125-73 ft, td 2644 ft, pb 2176 ft, shot 50 qts, pump 20 bbls; Griffin 12, sw ne se 20-4s-2w, top of sand 2918 ft, td 3908 ft, pb 2960 ft, pump 9 bbls; Lamb 4, nw ne ne 29-4s-2w, sand 2247-66 ft, td 2296 ft, pump 18 bbls.

CREEK COUNTY: Kellyville—Central Commercial's Bruce 1, ne ne nw 33-17n-10e, Bartlesville 2236 ft, td 3039 ft, dry.

GRADY COUNTY: Chickasha Gas—Sinclair Prairie's Charlson 7, c se se 22-5n-8w, Charleston sand 3860 ft, td 4113 ft in shale, perf, 145,000,000 gas 1840 lbs rock pressure, shut in.

HUGHES COUNTY: Wildcats—W. J. Jones' Bryant 1, se sw sw 29-5n-9e, top sand 2398 ft, abnd 2450 ft.

Marshall's Hundley 1, c w½ sw se 27-5n-10e, top sand 5060 ft, td 5176 ft, pb 5085 ft, abnd.

E. Wewoka—A. Z. Phillips' Replogle 1, se ne sw 13-9n-10e, Hunton lime 3760 ft, td 3956 ft, pb 3785 ft, pump 90 bbls oil, 200 bbls water.

KAY COUNTY: Dilworth — Nat'l Union's Branine 2, nw ne ne 30-28n-1e, Wilcox 3348 ft, td 3356 ft, pb 3355 ft, shot 10 qts, pump 25 bbls oil and 7 bbls water.

JEFFERSON COUNTY: Wildcat—M. T. McLaughlin et al's Coffer 1, sw se sw 26-4s-9w, Arbuckle 2780 ft, abnd 3110 ft.

LINCOLN COUNTY: Wildcats—H. F. Wilcox O&G's Royer 2, nw sw ne 18-14n-6e, Prue 3228 ft, td 4110 ft, pb 3325 ft, shot 230 qts, show oil, abnd.

Skelly's Stewart 1, ne sw ne 2-13n-2w, Paw. 1600 ft, Avant 3130 ft, Hogs. 3435 ft, Layton 3475 ft, ccb 3770 ft, Cleveland 3822 ft, Osw. 4385 ft, Prue 4438 ft, abnd.

LOGAN COUNTY: Guthrie—McBride's Eastwood 6, se nw sw 7-17n-1w, Bartlesv. 5101 ft, td 5118 ft, shot 40 qts, 408 bbls.

MARSHALL COUNTY: Cumberland—Pure's Crissman (104) 3, sw se se 20-5s-7e, sand 4999 ft, td 5058 ft, shot 40 qts, flow 37 bbls.

Isom Springs—Hewitt Mineral Inv.'s Adams 3B, se nw nw ne 6-8s-6e, top sands 546 ft, td 556 ft, pump 25 bbls.

McCLAIN COUNTY: Wildcat—F. W. Merrick's Jones 1, ne ne sw 1-5n-3e, brn. lime 3124 ft, Hunton 3240 ft, no show, Vi. 3383 ft, abnd 3871 ft.

MUSKOGEE COUNTY — Unnamed Foltz' Bartholet 2, sw c ne 17-14n-17e, Wilcox 1960 ft, abnd 1973 ft.

NOBLE COUNTY: Wildcat—Carter's State 1, ne ne sw 13-21n-2e, Wilcox (2nd) 4434 ft, abnd 4471 ft.

OKFUSKEE COUNTY: East Cromwell — Titus' sand 5, sw se se 26-11n-8e, Union V. 3417 ft, td 3433 ft, pump 75 bbls oil & 75 bbls water.

Un-named—Shell's Harjo 2, ne sw nw 17-11n-9e, Hunton 3848 ft, td 3938 ft, acid 3000 gals, flow 39 bbls oil and 50 bbls water thru csg.

Blakely—Droppleman's Yahola 1, ne ne sw 15-11n-10e, Hunton 3673 ft, td 3946 ft, pb 3772 ft, perf 18 holes at 3670-3718 ft, 3,000,000 gas.

OKLAHOMA COUNTY: Oklahoma City—Big Chief's Hanna 1, sw ne sw sw 22-12n-3w, Wilcox 6400 ft, td 6526 ft, shot 160 qts, pump 189 bbls.

OKMULGEE COUNTY: Tiger Flats—W. S. Bogie s Bean 3, nw nw ne 14-12n-12e, Dutcher 2231 ft, td 2245 ft, 6,250,000 gas, 500 lbs rock pressure.

OSAGE COUNTY: Burbank—Phillips' Burbank 16, nw ne ne 36-27n-5e, Burbank 2958-3077 ft, td 3010 ft, shot 80 qts, pump 24 bbls oil and 16 bbls water.

PITTSBURG COUNTY: Wildcat—Public Service Co.'s Tribal Lands 1, se se ne 9-4n-16e, sand 335-37 ft, show gas, coal 772-74 ft, sand 884-90 ft, show gas, Hartshorne 1204-80 ft, est 1,500,000 gas, sand 1280-1630 ft, pb 1280 ft, shot 1300 lbs gelatine 1214-80 ft, ran tubing 1204 ft, 1,500,000 gas.

PONTOTOC COUNTY: Un-named — Bishop's McCurry 1, se ne nw 15-4n-6e, sand 831 ft, td 860 ft, shot 20 qts, pump 14 bbls oil, 25-gr. Lake's Moore 1, se nw ne 28-5n-4e, Trenton 2731 ft, abnd 2891 ft.

POTTAWATOMIE COUNTY: S. Konawa—Culver & Shephard's State 3, sw ne nw 16-5n-5e, Hunton 2158 ft, td 2406 ft, acid 2500 gals, pump 30 bbls, 32-gr oil.

St. Louis—Magnolia's Hughbanks 5, se ne nw 17-7n-4e, dolomite 4007 ft, td 4015 ft, acid 4000 gals, pump 270 bbls.

Un-named—Crosble & Atlantic's Hudson 1, nw nw nw 11-9n-4e, dense 4118 ft, td 4883 ft, acid 500 gals, abnd.

Hotulka—Smith Bros.' Kissinger 1, ne nw ne 27-9n-4e, Viola 4391 ft, dense 4440 ft, td 4634 ft, pb 4440 ft, perf 12 holes at 4392 ft, pump 325 bbls oil, 10% water.

Earlsboro — Delaney-Osborn's School Land 1A, ne se nw 16-9n-5e, Viola 4150 ft, dense 4191 ft, td 4250 ft, pb 4185 ft, perf 24 holes 4159 ft, acid 7000 gals, dry.

Tecumseh Lake—Gulf's Dixon 1, se nw sw 36-10n-3e, dolomite 5228 ft, td 5245 ft, pb 5228 ft, acid 1000 gals, swab 93 bbls oil, lots of water, abnd.

POTTAWATOMIE COUNTY: Wildcats—Kerlyn's Kirk 1, nw ne sw 1-8n-4e, Hogs. 2260 ft, cckb'd 2650 ft, Calvin 3396-3604 ft, and 3457-61 ft, Hunton 4101 ft, Chemney Hill 4125 ft, drill stem test 4101-65 ft, show gas 150 ft, oil cut mud, Sylvan 4163 ft, Viola 4259 ft. Dense 4310 ft, Dolo. 4330 ft, 1st Wx. 4393 ft, sandy dolo 4493 ft, 2nd Wx. 4510 ft, td 4535

ft, pb 4374 ft, perf, show oil, sqz 125 sax, drld out to 4351 ft, perf 4340-50 ft, show oil, 3000 gals acid, 210 bbls oil and some water.

Lyons & Smith's Stalnaker 1-B, sw nw sw 24-8n-4e, Hunton 4151 ft, Sylvan 4210 ft, Viola 4320 ft, Dense 4370 ft, 1st Wilcox 4476 ft, td 5005 ft, bailed down to test, show oil 4474-88 ft, water 4488-95 ft, pb to Hunton, ripped & had show oil & water, abnd.

SEMINOLE COUNTY: Sasakwa—Eason & Grisso's Van Buskirk 3, 270 ft e of c s½ nw, 7-6n-8e, 2nd Calvin td 1192 ft, shot 7 qts at 1183-90 ft, pump 70 bbls oil.

SEMINOLE COUNTY: Wildcats—C. L. Jensins' Smith 1, se se ne 29-8n-6e, Hunton 4354 ft, td 4619 ft, perf 60 holes 4360-4390 ft, acid 4000 gals, pump 43 bbls.

Stanolind-Amarada's Tucker 1, se ne sw 11-10n-7e, Viola 4395 ft, abnd 4489 ft.

STEPHENS COUNTY: Velma—Skelly's Harmon "A" 6, ne se se ne 27-1s-5w, sand 909-20 ft, td 920 ft, shot 10 qts, pumped 18 bbls.

Skelly's Martin 8, ne se nw 36-1s-5w, sand 620-33 ft, sand 720-35 ft, td 735 ft, shot 20 qts, oil.

Mudge Oil Co.'s Broadben 7, sw ne sw nw 1-2s-5w, sand 830-37 ft, td 837 ft, pb 837 ft, pumped 3 bbls oil.

Woolsey—Glen Grimes' Baker 3A, nw c sw ne 35-2s-6w, sand 1851-55 ft, drill stem test 1844 ft to 1855 ft, 425 ft oil and 75 ft mud, set 7 in. at 1843 ft, with 125 sacks cmt, drill plugs, show water, bail 3 bbls oil and 1 bbl water 7 in. collapsed, abnd.

OLD WELLS DEEPENED

CARTER COUNTY: West Hewitt—W. H. Smith's Ward 12, 110 ft e of c e½ ne ne 19-4s-2w, otd 2077 ft, sand top 2044 ft, td 2359 ft, pb 2208 ft, shot 100 qts, flowed 500 bbls oil.

CREEK COUNTY: North Bristow—Sinclair Prairie's Marshall 2, sw sw sw 31-17n-9e, otd 2793 ft, Mississippi 3172 ft, td 3387 ft, dry.

KIOWA COUNTY: Hobart—Argo's Ratcliff 1, se ne ne 19-7n-17w, otd 1055 ft, Viola lime 1315 ft, td 1566 ft, 120 ft, fluid in 8 hrs, water, abnd.

OKFUSKEE COUNTY: East Cromwell—Sunray's Miracle 2, ne nw se 35-11n-8e, otd 3429 ft, td 3454 ft, pb 3435 ft, acid 2000 gals, pump 340 bbls oil & 100 bbls water.

STEPHENS COUNTY: Velma—Mudge Oil Co.'s Broadben 10, nw ne sw nw 1-2s-5w, sand 680-745 ft, small show oil, abnd 828 ft.

WILDCAT STARTS

LINCOLN COUNTY—Buell & Herndon's Gray 1, c nw sw 3-13n-6e, dr.

OKFUSKEE COUNTY—Kerlyn's Klabzuba 1, se sw se 18-11n-7e, mit.

PAYNE COUNTY—H. L. Berkey's Frick 1, c s½ sw nw 33-19n-2e, lcn. Mutual Oil & Royalty's Tigner 1, ne nw nw 19-20n-4e, lcn.

Kansas

Forty-Third Pool Makes 1941 Record for Discoveries

Kansas ends year with 43 new fields opened to break all-time record; operator now testing new area in Pratt County; Reno County assured of new discovery; Simpson producing area in prospect for Rooks County.

Cowley County: Trees Oil Co.'s Deichman 1, NWc SW 24-31s-4e, new Bartlesville discovery 2 mi east of Hittle pool, officially designated Kansas' 43 new field for 1941, well did 78 bbls oil in initial swab test at 2836 ft.

Pratt County: Falcon-Seaboard Drilling Co.'s Randle 1, CE½ SE NE 28-28s-13w, 3½ mi south of Pratt, drilled to Arbuckle dolomite for no shows, plugged back tested Simpson sand at 4454-60 feet for no shows, perforated Viola lime 4375-80 ft for fair but unestimated oil fillup, operators to reperforate with 12 shots in same horizon.

Reno County: Central Petroleum Co.'s Schweizer 1, SEc NW 31-22s-9w, 1½ mi northwest of the new Hendrickson pool, drilled to 3721 ft in Viola lime topped at 3701 ft, cleaned out, reportedly swabbing 7 bbls oil per hr, may open new pool on rough line extending northeast from Zenith pool of Stafford County through Peace Creek, Peace Creek Northeast and Hendrickson, all newly-opened Viola lime pools.

Rooks County: Derby Oil Co.'s Steele 1, CN1 NW NW 9-6s-20w, 2 mi southeast of Ray pool of Phillips County, may open new Simpson sand pool, well drilled to 3639 ft in Granite wash, 7-in set at 3602 ft, drilled out plug and well was swabbing 8 bbls oil per hr, pay believed to be Simpson at 3613-38 ft, preliminary tests unsatisfactory because of bad cavings.

COMPLETIONS

BARTON COUNTY: Kraft—Aylward & Republic's Harzman 3, se se sw 33-16s-11w, Arbuckle 3325 ft, td 3330 ft, 1000 gals acid, 3000 bbls.

BARTON COUNTY: Ainsworth—Stanolind's Riemann 10, c s½ ne nw 34-16s-13w, Arbuckle 3413 ft, td 3421 ft, 300 gals acid, pumped 250 bbls oil and 46 bbls water.

BARTON COUNTY: Un-named—Stanolind's Soeken 1, nw nw nw 22-17s-11w, Arbuckle 3271 ft, td 3281 ft, 2500 gals acid, swabbed 87 bbls oil in 13 hrs, 3000 bbls.

BARTON COUNTY: Silica—R. E. Hess et al's Schmidt 1, c s½ sw sw 36-19s-11w, c s½ sw sw Arbuckle 3280 ft, td 3302 ft, 2000 gals acid pumped 76 bbls.

Gulf's Schartz 4, ne se sw 18-20s-11w, Arbuckle 3359 ft, abnd 3365 ft.

BARBER COUNTY: Wildcat—Pryor & Lockhart et al's Massey 1, c e½ ne nw 35-30s-15w, cem 12-in, 152 ft, Lansing 3907 ft, show oil 4344-55 ft, Viola 4501 ft, Simpson 4596 ft, Arb. 4676 ft, td 4719 ft, shot 4342 ft, no show, shot 4343 ft, show good, shot 4344 ft, hole full oil, 30 bbls pr hr, max 3000 bbls.

BROWN COUNTY: Wildcat—Ray Anderson et al's Dick 1, c se sw 17-9s-20e, Bartlesville 1467 ft, td 1484½ ft, shot 20 qts, pumped 55 bbls.

BUTLER COUNTY: Eldorado—Cities Service's Wilson 209, 100 ft s of nw sw ne 8-25s-5e, Kansas City 1967 ft, td 2036 ft, 2000 gals acid, pumped 19 bbls oil and 50 bbls water.

BUTLER COUNTY: Keighley—Murfin et al s Sutter 2, ne ne ne 7-28s-7e, Miss. lime 2709 ft, abnd 2721 ft.

BUTLER COUNTY: Douglas—M&L's Creed 5, c w½ sw sw 17-29s-4e, Lansing 1865 ft, td 1929 ft, pb 1908 ft, 1000 gals acid, pay 1834-1906 ft, pump 35 bbls.

COWLEY COUNTY: Wildcats — Sinclair Prairie's Collinson 1, sw sw nw 31-34s-3e, Bartlesv. 3474 ft, Miss. lime 3499 ft, td 3558 ft, old gas area, hole full water, abnd.

ELLIS COUNTY: Bemis—Cities Services' McCord 12, nw se se 26-11s-17w, Arbuckle 3561 ft, td 3569 ft, 2775 ft, oil per hr, 3000 bbls.

Deep Rock's Baumer 35 c e½ nw sw 27-11s-17w, Arbuckle 3589 ft, td 3598 ft, 3400 gals acid, 2800 ft oil in 24 hrs, potential 1079 bbls oil.

ELLIS COUNTY: Semi-Wildcat—J. J. Hall's Oswald E 1, ne sw sw Blue Hill area 2-12s-16w, Simpson 3406 ft, td 3437 ft, abnd 3120 ft.

ELLIS COUNTY: High Spot—Cities Service's Rush c s½ sw ne 28-12s-16w, Arbuckle 3588 ft, td 3625 ft, pb 3390 ft, abnd.

ELLSWORTH COUNTY: Stoltenberg—Magnolia's Skalicky 4, c w½ se nw 9-16s-10w, Arbuckle 3293 ft, td 3301 ft, 1250 gals acid, filled 2500 ft oil in 5 hrs, 3000 bbls.

Mid-Continent's Siemsman 1, 93 ft s of ne nw nw 2-17s-10w, Arbuckle 3260 ft, td 3295 ft, shot 16 qts, 3000 gals acid, pumped 312 bbls oil & 669 bbls of water.

ELLSWORTH COUNTY: Bloomer — Skelly's Moran 9, c n½ sw se 31-17s-10w, Arbuckle 3231 ft, td 3266 ft, 1000 gals acid, filled 3000 ft of oil in 2 hrs, 3000 bbls.

GREENWOOD COUNTY: Wildcat—Riggs & Herbert's Forbes 1, sw ne ne 20-27s-11e, KC 1334 ft, Osw. 1713 ft, show oil, 1713-28 ft, 2025½ ft, pay 2028-29½ ft, 240 ft oil in hole, 450 ft, fluid in hole, 1000 gals acid, pump 7 bbls oil & salt water per hr 4 days, pump 2 bbls oil and 40 bbls water per day, td 2080 ft, hole full water, abnd.

HARVEY COUNTY: Wildcat—A. M. Landon's Gray 1, nw nw ne 15 22s-2e, Ft. Riley 425 ft, Cottonwood 725 ft, base Oread 1390 ft, Lansing 2120 ft, Miss. 2733 ft, hole full water 2775-80 ft, Base Miss. 2965 ft, Misener 3077 ft, Viola 3079 ft, hole full water 3079-83 ft, td, abnd.

JEFFERSON COUNTY: McLouth—Ray Anderson et al's Dick 1, c se sw 17-9s-20e, Bartlesville 1467 ft, td 1484½ ft, shot 20 qts, pumped 55 bbls oil.

W. O. Smyth's Todd 1, c sw se 20-9s-20e, Miss. lime 1425 ft, td 1505 ft, hole full water, abnd.

McLaughlin et al's Knutson 2, c nw nw 33-9s-20e, sand 1393 ft, td 1408 ft, 11,450,000 gas.

JEFFERSON COUNTY: Wildcats—O. J. Connell's Edmonds 1, c sw ne 21-9s-20e, Oread 128 ft, Bartles. sand 1465-65 ft, td 1480 ft, pb 1470 ft, 2,300,000 gas, rock pressure 510 lbs.

LEAVENSWORTH COUNTY: Wildcats—McKinney & Miller's Roberts 1, c n½ ne ne 7-11s-21e, Miss. 1395 ft, td 1441 ft, dry.

McLaughlin et al's Wilkens 1, c sw ne 15-10s-20e, Oread 30 ft, no sand, Miss. 1560 ft, td 1575 ft, hole full water, abnd.

MARION COUNTY: Lost Springs—Phillips' Reznicek 6, c w½ se sw 22-17s-4e, Miss. lime 2391 ft, td 2450 ft, dry.

Larieux & Herrington's Novak 5, c e½ w½ sw 28-17s-4e, Miss. lime 2398 ft, td 2430 ft, pb to 2415 ft, pumped 190 bbls oil and 992 bbls water.

NEMAHA COUNTY: Wildcat—A. C. Bumpis et al's Achten 1, c se nw 12-4s-14e, Hunton 2958 ft, td 3130 ft, dry.

NORTON COUNTY: Wildcat — Helmerich-Payne et al's LeCount 1, c ne se 1-2s-25w, Granite 3723 ft, td 3725½ ft, dry.

PAWNEE COUNTY: Wildcat—Skelly et al's Yeager 1, c w½ sw sw 32-22s-15w, Arbuckle 4000 ft, td 4025 ft, pb 3982½ ft, perf csg, 1250 gals acid, dry.

PHILLIPS COUNTY: Ray—Cities Service's Vehige 2, ne sw sw 28-5s-20w, Arbuckle 3583 ft, td 3589 ft, pb 3586½ ft, perf csg, 5000 gals jet acid, 2000 gals acid, pumped 250 bbls oil cut 2½% B.S.

Cities Service's Ray C 2, sw nw ne 32-5s-20w, Reagan 3551 ft, td 3556 ft, filled 2750 ft oil in 7 hrs, potential 2563 bbls.

RENO COUNTY: Wildcats—Leader-Zephyr's Tonn 1, sw sw sw 11-23s-10w, Viola 3755 ft, td 3768 ft, 3000 bbls oil.

Rocket Drlg.'s Soper 1, c n½ ne nw 30-25s-4w, Viola 3981 ft, td 3986 ft, 1250 gals acid, pumped 495 bbls oil, grav 36.8 degrees.

Central Pet.'s Hendrickson 1, w½ nw ne 2-23s-10w, Topeka 2765 ft, Lansing 3237 ft, Congl. 3612 ft, Kinderhook 3615 ft, Viola 3678 ft, soft zone 3678-95 ft, Dolo. 3713 ft, show oil 3713-17 ft, loaded hole with 2000 gals water, cherty dolo 3738-42 ft, 300 ft oil in hole, td 3744 ft, 2000 gals butane, 4000 gals acid, gravity 36 degrees, 217 bbls oil.

RICE COUNTY: Wildcats—Nelson Drlg.'s Skiles 1, c s½ sw sw 8-18s-8w, Lansing 2878 ft, td 3015 ft, dry.

Ingling & Parker's Jeter 1, c e½ se se 3-21s-9w, Simpson 3347½ ft, td 3355 ft, pb 3348½ ft, perf csg, dry.

RICE COUNTY: Genesco—Continental et al's Jones 3, nw sw ne 36-18s-8w, Arbuckle 3194 ft, td 3206 ft, 3000 gals acid, 3000 bbls oil, cut some water.

RICE COUNTY: Cramm—Bishop Oil's Cramm 4, c s½ n½ sw 15-19s-9w, Arbuckle 3210 ft, td 3220 ft, pb to 3184 ft, perf csg, 4000 gals acid, pumped & flowed 2484 bbls.

ROOKS COUNTY: Laton—Jayhawk's Stites 1, c s½ nw sw 12-9s-16w, Lansing 3205 ft, td 3365 ft, dry.

RUSH COUNTY: Wildcat—Nelson et al's Folkerts 1, c s½ se ne 18-19s-16w, Arbuckle 3847 ft, td 3879 ft, dry.

RUSSELL COUNTY: Atherton—Derby et al's Dillner 1, c e½ se ne 35-13s-15w, Arbuckle 3322 ft, td 3325 ft, 1000 gals acid, pumped 144 bbls oil and 48 bbls water.

RUSSELL COUNTY: Hall—Eldorado Ref.'s Rein 1, sw se nw 20-14s-13w, Arbuckle 3277 ft, td 3319 ft, hole full water, abnd.

Braden & McClure's Opdycke 1, c n½ ne nw 29-14s-13w, Lansing 2899 ft, td 2942 ft, 8000 gals acid, pumped 364 bbls oil.

RUSSELL COUNTY: Vaughn—Cities Service's Ebel "A" 3, c n½ se sw 24-14s-14w, Lansing 2919 ft, td 2965 ft, 5000 gals acid, pumped 333 bbls oil and 12 bbls water.

RUSSELL COUNTY: Rusch — Westgate-Greenland's Fleegler 1, c w½ nw sw 28-14s-14w, Arbuckle 3212 ft, td 3240 ft, hole full water, abnd.

RUSSELL COUNTY: Greenvale—Cities Service's Cook 5, sw sw se 4-15s-12w, Gorham 3273 ft, td 3283 ft, 798 bbls.

RUSSELL COUNTY: Coralena—Cities Service's Rogg D 6, c e½ e½ ne 9-15s-13w, Lansing 3021 ft, td 3071 ft, pay 3063-69 ft, 5000 gals acid, 1432 bbls oil potential.

RUSSELL COUNTY: Trapp—Transwestern's Boomhower 5, c w½ w½ sw 19-15s-13w, Arbuckle 3313 ft, td 3318 ft, 1000 gals acid, potential 1134 bbls.

RUSSELL COUNTY: West Trapp—Phil-Han's Ochs 1, c n½ ne ne 22-15s-14w, Arbuckle 3338 ft, td 3356 ft, dry.

SEDGWICK COUNTY: Wildcats—I. W. Murfin et al's Gessell 1, sw sw se 33-26s-2e, Ft. Riley 328 ft, Florence 400-471 ft, Tarkio 1420 ft, Topeka 1535 ft, base Oread 1957 ft, Lansing 2125 ft, KC 2478 ft, hole full water 2540-56 ft, Miss. 2923 ft, Misener 3239-40 ft, hole full water 3255 ft, Viola 3240 ft, base Viola 3272 ft, Simpson sand 3272 ft, Arbuckle 3360 ft, 3000 ft, fluid in hole, td 3362 ft, abnd.

Rocket Drlg.'s Soper 1, c n½ ne nw 30-25s-4w, Ft. Riley 1010 ft, base Florence 1145 ft, Topeka 2205 ft, Lansing 2912 ft, Miss. 3539 ft, base Miss. 3800 ft, Viola 3981-86 ft, some satur in cuttings, 1250 gals acid, Pot. 497 bbls oil, grav. 36.8 deg.

STAFFORD COUNTY: Zenith—Getty's Johnson 2, c s½ nw se 3-24s-11w, Viola 3725 ft, td 3760 ft, 5000 gals acid, bottom hole pot. 3000 bbls.

Dasa Oil's McComb 3, c n½ nw ne 22-24s-11w, Misener 3799 ft, td 3814 ft, 3000 gals acid, 330 bbls oil, 14% water.

STAFFORD COUNTY: Wildcats—Continental et al's Holmes 1, se se se 9-24s-13w, Anhy. 748 ft, Topeka 3065 ft, Lansing 3548 ft, Viola 3890 ft, Arb. 4083 ft, td 4118 ft, dry.

W. W. Drlg.'s Wilson 1-A, c n½ nw nw 5-25s-14w, Lansing 3612 ft, Misner sand 3951 ft, Viola 3958 ft, washed hole 100 gals acid, pb 3965 ft, shot 10 qts 3960-65 ft, td 4210 ft, pb 3948 ft, abnd.

SUMNER COUNTY: Padgett—T. M. Deal O&G's Ewing 1, c e½ ne se 4-35s-2e, Miss. lime 3416 ft, pay 3457-3471 ft, td 3471 ft, est bail 5 bbls oil, lots of water, abnd.

WILDCAT STARTS

BUTLER COUNTY—Ash & Plymate's Hannabaum 1, ne sw se 15-24s-4e, dr.

COWLEY COUNTY—T. M. Deal's Ferguson 1-B, c n½ sw se 17-30s-8e, rur. Helmerick & Payne et al's Wilson 1, s w½ lot 4 nw, 31-34s-8e, rur.

DICKINSON COUNTY—Nelson Drlg.'s Will 1, se se ne 8-16s-4e, lcn.

JEFFERSON COUNTY—C. P. Minor's Minney 1, c se sw 28-10s-20e, shut down.

LEAVENWORTH COUNTY—E. V. Jackson's Geisen 1, c n½ ne se 5-9s-21e, rum. W. O. Smyth's Miller 1, c ne se 22-10s-20e, dr.

NORTON COUNTY—Helmerich & Payne's Conway 1, c se ne 7-3s-23w, mim.

RENO COUNTY—Cities Service Oil's Morton 1, sw sw ne 17-24s-8w, rur.

ROOKS COUNTY—Caude Wentworth's Yeagy 1, c n½ nw nw 16-9s-17w, sd.

STAFFORD COUNTY—B & R Drlg. et al's Homer Ira 1, ne ne se 13-21s-11w, rur. Adair & Morton's Roberts 1, c n½ ne ne 14-21s-12w, lcn. Champlin Ref.'s Thomas 1, c n½ nw sw 29-25s-11w, rr. Veeder Supply's Eriksen 1, c s½ se ne 3-22s-11w, lcn.

New Mexico

North End of Arrowhead Gets Good Producer

Competitive drilling revived in north portion Arrowhead field, Lea County, by prolific completion. Maljamar field outpost plugged back to try for shallow production. Eddy County discovery making pumping test. New Mexico operators taking steps to observe 40-acre well spacing, which has been followed heretofore by majority completions.

Lea County: Repollo Oil Co.'s Brownlee 2, SWc 25-21s-36e, ½-mile north of Arrowhead pool and same distance southwest of company's semi-wildcat, flowed 230 bbl oil 4½ hours, with gas volume rated 1,500,000 ft daily after using 1500 gallons acid 3750-3815 ft. Rig has been skidded for drilling of Brownlee 3. Brownlee 1 completed August, 1936, or 22 months prior to Arrowhead discovery, and continues to average 32 bbls oil daily. In the Salt Lake pool, Continental et al's Brooks 2-A-7, C SE SW 7-20s-33e, cemented 5½-inch 2910 ft, and Harry Leonard and Van Welch's State 4, C SE NW 18-20s-33e, testing pay 2992-3004 ft. W. J. Rutledge, Jr., et al's State-Texaco 4-O, C SE NW 16-17s-32e, offsetting failure in north portion of Maljamar field, testing after 50-quart nitro shot 3140-60 ft, having plugged back from 3762 ft. This outpost developed 30,000,000-foot flow dry gas at 3139-55 ft, but mudded off same in deepening to regular oil zone.

Eddy County: P. B. English et al's Jones 1, C SE NE 24-19s-31e, which qualified as year-end discovery in swabbing 4 bbls oil hourly from sand 2461-70 ft, elevation 3554 ft, awaiting official pumping gauge.

COMPLETION

Eddy County—Williams & Ployhar's (was Featherston) Brooks 1-B, se nw nw 35-17s-27e, abnd 600 ft.

Rocky Mountain

Kit Carson Wildcat Will Test Saturated Lime Streak

Kit Carson, eastern Colorado wildcat, standardizing to drill in and test saturated lime streak. Federal government offers 920 acres proved Oregon Basin, Wyoming, oil lands for lease. Deep Baker, Montana, well acidizing and testing upper zone.

Eastern Colorado: O. E. Torrey's Whitson 1, NW NW SE 12-13s-49w, Kit Carson wildcat, Cheyenne County, cored saturation 4810 to bottom 4812 ft, Marmaton lime, running 5-in, will standardize and test.

Stanolind's Snell 1, C SE SW 7-20s-41w, South Towner wildcat, Kiowa County, drilling 5251 ft, reported, but unconfirmed, 500 ft below objective Patterson sand of Cherokee lime, pay horizon in Stanolind's Patterson pool, recent Kearny County, Kansas, discovery, 30 miles due east South Towner.

Oregon Basin Sale: January 22, federal government will at Land Office, Cheyenne, offer for lease at competitive bid 7 tracts of proved acreage, Oregon Basin black oil field. Park County, northern Wyoming. Six of tracts, comprising 880 acres, on South Dome; 1 tract of 40 acres on North Dome.

Deep Pilot Butte: Superior of California's Tribal 1, SE SW SW 15-3n-1w, joint with British American Oil Producing Co., deep test Pilot Butte field, Fremont County, Wyoming, topped Muddy 3159 ft, showed 824 M-ft dr stem, topped Dakota 3395 ft, dr shale 3672 ft.

Deep Baker: Montana depth record well, td 9678 ft, Carter's Unit 1, C SW SE 19-4n-62e, Little Beaver Dome, Cedar Creek gas field, Baker-Glendive Anticline, Fallon County, acidizing and testing Madison, 8485-8505 ft.

MONTANA

COMPLETIONS

GLACIER COUNTY: Cut Bank—William Hanlon's Tribal 2-196, se nw ne 30-32n-5w, cable tools, swabbing 260 bbls from Lower Cut Bank 2835-49 ft, td 2856 ft, elev 3514 ft, will go on pump.

Santa Rita Oil & Gas Co.'s Tribal 15, sw se ne 3-35n-6w, cable tools, swabbed 468 bbls initial from Sunburst 2960-75 ft, td 2978 ft, elev 3969 ft, will go on pump.

Texas Co.'s Govt. 4, csw sw 17-32n-5w, rotary, swabbed 195 bbls, will go on pump, from Lower Cut Bank 2966-76 ft, td 2987 ft, elev 3752 ft. Miller-Morgan 1, nec 32-33n-5w, rotary, swabbed 293 bbls, will go on pump, Lower Cut Bank 2994-3016 ft, td 3022 ft, elev 3876 ft.

WYOMING

COMPLETION

SWEETWATER COUNTY: Wertz—Sinclair-Wyoming's Unit 26-A, nw se se 1-26n-90w, rotary, 600 bbls daily flowing thru tubing. Elev 7005 ft, Tensleep saturation 5939-6311 ft, td.

Texas Panhandle

COMPLETIONS

Carson County—Gulf's Block 13, I&GN 111, blk 4, pumped 103 bbls, shot, td 3156 ft. Federal Drl. Co.'s Burnett 9, I&GN 115, blk 5, pumped 208 bbls, shot pay 3085-3100 ft.

Gray County—Cree & Hoover's Jackson 1, H&GN 94, blk B-2, pumped 97 bbls, shot 730 qts 2914-3031 ft, lime 2909-3031 ft. Gulf's Faulkner 18-A, H&GN 33, blk B-2, pumped 52 bbls, shot, td 3070 ft. Phillips' Tay (Taylor) 4, H&GN 24, blk B-2, pumped 270 bbls, shot 380 qts 2898-3002 ft, td 3013 ft. Skelly's Taylor 7, H&GN 24, blk B-2, pumped 311 bbls, shot 603 qts 2870-2982 ft. Smith Bros. Ref. Co.'s Cole 1, sec sw I&GN 104, blk 3, elev 3248 ft, abnd 3306 ft.

Hutchinson County—Danube Oil Corp.'s Sanford 11-A, H&TC 78, blk 46, pumped 170 bbls, shot 2759-2770 ft. J. M. Huber Corp.'s Weatherly 17, sec 25, blk Y, flowed 614 bbls, granite wash 2905-64 ft, td 3074 ft. Shell's Harvey Sisters 39-B, TC Ry 14, blk M-21, pumped 335 bbls, shot 155 qts 3026-85 ft; Harvey Sisters 40-B, TC Ry 14, blk M-21, pumped 305 bbls, shot 160 qts 3023-82 ft. Harry Stekoll et al's Whittenburg 19-L, H&TC 21, blk 47, pumped 56 bbls, shot 150 qts 3020-80 ft. Texas Co.'s Pond 40, swc sw se TC Ry 1, blk M-21, pumped 384 bbls, shot 505 qts 2945-3048 ft.

Moore County—Texoma Natural Gas Co.'s Brown 3-G, sec 4, blk M-I, 9.8 mil ft dry gas, 345 lbs rock press, lime 2592-2763 ft.

Wheeler County—Teel Production Co.'s Calhoun 1, sw ne sw H&GN 72, blk 13, abnd 2270 ft.

West Texas

Shallow Permian Showing On Abell Southeast Edge

Andrews County wildcat temporarily passes up favorable oil and gas show in Lower Permian. Reagan County's 9100-foot pool assigned new operations, and outpost checking high. Shallow Permian production uncovered on south east edge Abell field. Major extension due for Todd deep area. Drilling operations halted at shallow depth by some operators in order to adopt 40-acre well spacing so as to assure favorable priority rating on tubular goods. Gulf, Humble and others shutdown contract rigs for purpose of conforming to OPM's December 23 order.

Andrews County: Fullerton Oil Company's Wilson 1, NE SW SE PSL Sec 15, Blk A-32, near center of northwest quarter of county and amidst regular Permian failures, blew sweet gas and recovered 930 feet of oil- and gas-cut mud when tester was used in Lower Permian at 6806-7055 ft. Nominal porosity and oil stain was logged at intervals in coring to 7109 ft, but second drill-stem test at 7009-7109 ft yielded only 90 feet of rotary fluid. This prospect will be deepened to Ellenberger, or 8500 ft, with assurance that further production test will be made of the 6806-7055-ft lime. Two sub-Permian wildcat failures in southwest part of county encountered favorable shows in Lower Permian.

Reagan County: Amerada's University 1-R-D, 1½ miles east of its Barnhart pool discovery, was drilling lime 5270 ft, elevation 2698 ft, checking about 115 feet high to indicate that structure embraces large area. Company's University 1-R-B, 4000 ft southwest of discovery, recently completed flowing 520 bbl 45-gravity oil 7 hours ½-in, used 5000 gallons acid through perforations 9106-32 ft in Ellenberger, topped 9060 ft, elevation 2762 ft, averaging 100 ft low to discovery on top of Ellenberger and first saturation. Operations starting on University 2-R-C, mile west of discovery and twin to University 1-R-C, abandoned in regular Permian 2790 ft. Tide Water Associated Oil Company is taking contract bids for drilling of east offset to discovery. These wells exceed in cost the deepest producers in Gulf Coast, and development may be retarded as current base allowable only 75 bbls daily per well.

Pecos County: Gulf and L. H. Wentz's Millar 2, recent Ellenberger discovery, flowed 261 bbl 33.7-gravity oil, gas-oil ratio 2767/1, on 24-hour gauge following 10,000-gallon acid treatment Ellenberger 4282-4383 ft. An additional injection of 8000 gallons acid was underway late last week. Pure Oil Company's T. P. Land Trust 1-A, Delaware prospect in extreme west portion county, drilling shale 5590 ft to fulfill depth contract before resuming test of oil zone 5082-5158 ft.

Abell Field: Seimoneit Drilling Company's Walsh 1, SWc Lot 11, H&GN Sec 25, Blk 9, originally completed last spring as gasser at 4978-89 ft, rated at 200 bbl oil daily after perforating 40 shots 3350-70 ft in upper Permian. A pumping completion from this new and shallowest pay has been pending

for some weeks on northwest edge of field. Magnolia's Erickson-State 1, west offset to 3950-foot oil discovery on northeast edge of field, flowed 55 bbl fluid, 36 percent sulphur water, and quit in 4 hours after using 2000 gallons acid through perforations 3850-80 ft, having plugged back from 3960 ft.

Crockett County: Amerada et al's Todd 1-G, C SE SE GC&SF Sec 15, 2 miles west by south of nearest production in Todd deep area and 1½ miles southeast of structurally low isolated producer, entered Crinoidal 6295 ft, elevation 2377 ft, and logged adequate broken pay to indicate a producer in drilling to 6513 ft. Top Crinoidal 88 feet high to the outpost, but 525 ft low when correlated with nearest field well. In Clara Couch two-well pool, Humble starting Owens 1-B and 1-C, situated ½-mile north and mile northwest, respectively, of its 2003-foot pumper. Lease expirations in fore part 1942 will net the area a number of outpost tests.

COMPLETIONS

ANDREWS COUNTY: Emma — Likins & Hall's University-Superior 1-B, SWc NE 36, Blk 10, flowed 1297 bbl natural 2-in, lime 4275-4322 ft.

COCHRAN COUNTY—T. P. Coal & Oil Co's Tarver 2, NWc Lab 9, Leag 15, Oldham CSL, flowed 977 bbl, acidized 10,000 gals, 4955-5015 ft.

CRANE COUNTY: Sand Hills Deep—Standard of Texas' Barnsley 1, c se se PSL 27, Blk B-27, elev 2459 ft, detrital 5595 ft, Ellenberger 5701-5845 ft, dry, pb 4330 ft, abnd.

ECTOR COUNTY: North Cowden—Sinclair Prairie's Johnson 29-D, SW SE T&P Sec 25, Blk 43, T-1-S, flowed 808 bbls, shot 370 qt 4090-4185 ft, td 4200 ft; Johnson 30-D, NE SW T&P 30, Blk 42, T-1-S, abnd, shot 370 qts 4080-4175 ft, no shows, td 4250 ft.

ECTOR COUNTY: Foster — Sinclair Prairie's Johnson 1-E, NEc SW T&P 46, Blk 43, T-1-S, flowed 992 bbl 1-in, shot 4077-4135 ft.

ECTOR COUNTY: Goldsmith—Gulf's Goldsmith 380, NEc NW SE T&P 17, Blk 44, T-1-S, flowed 413 bbl, acidized 4000 gals, td 4215 ft; Goldsmith 381, NEc SW T&P Sec 17, Blk 44, T-1-S, flowed 693 bbl 2-in ch, used 4000 gals acid 4245 ft.

Carl B. King Drlg. Co.'s Cummins-General Crude 1, NEc S½ SE T&P 26, Blk 45, T-1-N, flowed 418 bbl ¾-in, acidized 4200-77 ft.

GAINES COUNTY: Seminole—Magnolia-Atlantic's H. & J. 3-193, C NE NW WTRy 193, Blk G, flowed 584 bbl ½-in, pay 5130-86 ft.

HOCKLEY COUNTY: Slaughter—Magnolia's Mallet 21-J, SEc Lab 17, Leag 50, Scurry CSL, flowed 1181 bbl, acidized 10,000 gals, td 5034 ft. Gulf's Gordon 2, 440 ft from N and 1320 ft from n lines PSL 12, blk X, flowed 1501 bbl 2-in, acidized 12,000 gals, td 5070 ft. Stanolind's Slaughter 41-B, near C Lab 8, Leag 40, Maverick CSL, flowed 708 bbl, plus 2 percent water, acidized 4970-5045 ft; Slaughter 42-B, NEc Lab 26, Leag 37, Zavalla CSL, flowed 765 bbl, acidized 5005-65 ft; Slaughter 43-B, SEc Lab 26, Leag 37, Zavalla CSL, flowed 1174 bbl, plus 2.7 percent water, acidized 5012-85 ft.

The Texas Co's Slaughter 67, near C Lab 91, Leag 38, Zavalla CSL, flowed 1358 bbl, acidized 15,000 gals 4905-5030 ft; Slaughter 68, SWc Lab 66, Leag 39, Maverick CSL, flowed 1673 bbl, acidized 13,000 gals 4935-5020 ft; Slaughter 71, SEc Lab 79, Leag 38, Zavalla CSL, flowed 1979 bbl, acidized 14,000 gals 4905-5000 ft; Slaughter 79, NEc Lab 73, Leag 38, Zavalla CSL, flowed 1490 bbl, acidized 13,000 gals 4925-5000 ft.

HOCKLEY COUNTY: Wildcat — Anderson-Prichard-American Drl Corp's Ellwood 1, NWc Sec 15, Blk A, R. M. Thompson sur, elev 3427 ft, brown lime 3630 ft, San Andres lime 3950 ft, abnd 6000 ft.

PECOS COUNTY: Walker—W. H. Burleson et al's White-Baker 2-A, SWc E-60 ac N½ SE GC&SF 86, Blk 194, flowed 226 bbl plus 14 bbl water 2-in, shot 100 qts 1885-1915 ft, td 1923 ft.

Jas. L. Cooper et al's University-Humble 1, SEc Sec 13, Blk 16, flowed 86 bbl ¼-in, shot 120 qts 2121-45 ft, td 2147 ft.

PECOS COUNTY: Conry-Davis — Skelly's Smith 1, NWc Lot 13, H&TC 15, Blk 2, flowed 892 bbl natural ¾-in, perf 240 shots 3750-3805 ft, td 3945 ft.

PECOS COUNTY: Wildcat—Gulf and L. H. Wentz's Millar 2, C NW SE H&GN Sec 43, Blk 11, shallowest Ellenberger discovery for district, flowed 261 bbl 33.7-gr oil 2-in tubing 2767/1 gas/oil ratio, acidized 10,000 gals Ellenberger 4282-4383 ft.

REAGAN COUNTY: Barnhart — Amerada's University 1-R-B c nw ne sec 8, blk 48, elev 2762 ft, top Ellenberger 9000 ft, flowed 1783 bbl 45-gr ½-in, used 5000 gals acid, perf 9106-32 ft, td 9230 ft.

TERRY COUNTY: Slaughter—Gulf's Mallet 12, SWc NE Sec 5, Blk D-11, flowed 1123 bbl 2-in, acidized 10,000 gals, td 5015 ft.

UPTON COUNTY: Gulf-McElroy—Gulf's McElroy 262, SWc NW NW Sec 188, Blk F, flowed 2392 bbl 2-in, shot 730 qts 2680-2840 ft, td 2850 ft; McElroy 263, 440 ft from N and 1320 ft from E Sec 194, Blk F, flowed 469 bbl 2-in, shot 964 qts 2932-3139 ft, td 3149 ft.

WARD COUNTY—Gulf's Hutchings 164, NEc SW Sec 4 Blk F, flowed 761 bbl 2-in, shot 990 qts 2500-3060 ft, td 3075 ft; O'Brien 195, SEc NE NE Sec 22, Blk F, flowed 46 bbl 2-in, shot 400 qts 2600-90 ft, td 2694 ft.

Stanolind's Spencer 2-A, e w¼ of n¼ H&TS 53, blk 34, flowed 86 bbl 3/16-in, used 2000 gals acid 2920-33 ft.

WINKLER COUNTY: Gulf-O'Brien — Gulf's O'Brien 197, NW NE SE Sec 11, Blk F, flowed 682 bbl, pay 2702-2945 ft.

WINKLER COUNTY: Keystone—Ralph Lowe et al's Zachary-Atlantic 5, 440 ft from W and 2200 ft from S of E-200 ac of S-480 ac PSL 24, Blk B-3, flowed 203 bbl 1-in, shot 3140-3241 ft.

YOAKUM COUNTY: Wasson—American Liberty's Randall-Texaco 8, C SE NE Sec 835, blk D, flowed 408 bbl 2-in, used 5000 gals acid, td 5235 ft.

WILDCAT STARTS

Crockett County—R. O. Anderson and M. C. Alston's Shannon-Tidal 1, SWc Tr 7, Leag 3, Archer CSL, machine.

North Texas

New Strawn Production Opening in Jack County

Archer County deep prospect yields small volume oil. Jack County wildcat opening new Strawn pool. Hunt Oil Company's explorations in Denton and Wise Counties are failures.

Archer County: Golding and Cochran's Kunkel-Sun 1, 3 miles north of Olney, filled 380 feet with oil and 20 feet with acid sludge after acidizing perforations 4696-4720 ft in Bend, topped at 4689 ft. Perforations at 4878-94 feet previously yielded small show oil and gas. This wildcat entered dry Missippian at 5237 ft, and was drilled to 5303 ft. Half-mile east extension for the Griffin-Kadane pool assured when Roy Lee et al's Heden 1, SWc NW SE Sec 14, logged Strawn sand 4347-50 ft and 4357-65 ft. Production test pending.

Jack County: Roeser-Pendleton, Inc.'s Webb 1, northwest corner of J. E. Middleton Survey and mile south of recent Ellenberger failure, yielded 35 bbls oil and 50 bbls water on 7-hour bailing test from 7 feet of Strawn sand, total depth 2933 ft, 7-inch 2875 ft. In Mary Hoefle one-well pool, Hanlon & Buchanan, Inc.'s Hoefle 1-B, south offset to 4835-foot flowing discovery, was given pipe line connection and prepared to test broken pay 4867-4906 ft in Bend, topped 4867 ft, being 5 feet high. Anderson & Prichard Oil Corporation's Hoefle-Conkling 1, same area, drilling 4320 ft, and Tubert-McKee and Sinclair Prairie's Hoefle 1-A drilling 2700 ft.

Clay County: Superior Oil Company of California's Scaling 1-A, 3½ miles northwest of Burns-Browning pool, plugged back to 5813 feet to test Mississippian, after recovering salt water following 6000-gallon acid treatment of Ellenberger 5810-65 ft. L. T. Burns et al's Wynn 4, ¼-mile north of 5905-67-foot Mississippian discovery, drilling 6270 ft to explore Ellenberger before completing in Mississippian saturation, topped 5873 ft, being 24 ft high. Shell is due to offset both wells.

Wildcats: Hunt Oil Company's Holman-Pure 1, northwestern Wise County, abandoned 6005 ft, having entered Bend at 5488 ft, and Stack 1, northwest edge Chico, drilling dry Strawn 4690 ft. In Denton County, Hunt Oil Company's Jones 1, John Thomas Survey, yielded small show oil and gas after using 2000 gallons acid through perforations at 5325-37 ft. Additional perforations made at 5365-68 ft preparatory to reacidizing. This wildcat entered Bend at 4085 ft, and proved dry in Ellenberger 5583-5633 ft.

Wilbarger County: Phillips Petroleum Co.'s Waggoner Est. 215, NWc H&TC Sec 43, Blk 4, expanded Ellenberger production to northwest in Rock Crossing field, flowing 83.47 bbls oil 3 hours, 9/16-in choke, acidized dolomite 3766-76 ft.

Wichita County: Magnolia's Waggoner 11-A, NE SW HT&B Sec 12, A-137, Ellenberger prospect, 1½ miles south of Electra, tested fresh water after using 1000 gallons acid in dolomite 3474-76 ft, and will deepen.

COMPLETIONS

COOKE COUNTY—Texas Co's Trubenbach 29, Lot 4, J. Clark sur A-194, pumped 50 bbl natural, sand 792-810 ft.

WISE COUNTY: Wildcat—Hunt Oil Co's Holman-Pure 1, 1100 ft from E and 700 ft from S lines 142.3-ac tr, Geo. W. Cash sur A-166, top Bend 5488 ft, abnd 6005 ft.

WILDCAT STARTS

Baylor County—Mazda Oil Corp's Wirz 1, NE NE SE BBB&C 1, lcn.

Montague County—Sinclair Prairie's Henderson 1, 467 ft SE of S cor J. M. Hodges sur, but on 320-ac tr, W. E. Martin sur A-111, mim; I. M. Jones 1, 467 ft from nw and 1400 ft from sw lines I. Singletary sur A-707, mim.

East Texas

Hawkins East Edge Defined by Failure

Rusk County's Nacatoch sand discovery flows natural, and Wilcox strike in Southern Houston County producing pipe line oil on input gas. Weekly quota of wildcat failures continue large. Dry hole listed for east edge Hawkins field.

Rusk County: O. W. Killam et al's Bass 1, J. I. Sanchez Survey and 2½ miles north New Salem, made brisk flow oil, including accumulated head, then dropped to an estimated flow of 10 bbls oil hourly after being shut in for some weeks. Production is from perforations 2910-65 ft in Nacatoch, topped at 2880 ft, elevation 414 ft. Killam et al's Richardson 1, nearby test, drilled to water in Woodbine at 4400 ft, and may plug back to try for completion in Nacatoch.

Houston County: C. P. Culmore and Ed Gillespie's Lundy 1, 1½ miles southeast of Lovelady, flowed 2 bbls 24-25-gravity oil hourly, including 20 percent wash water, when produced on gas lift. Production is from perforations 3215-20 ft in Wilcox, topped at 2084 ft, having plugged back from 5016 ft. Commercial pumper is assured. Development of area to follow, as this crude yields valuable lube content, being similar to the nearby Kittrell pool.

Trinity County: Magnolia's Wm. Cameron & Co. 1, Henry Bond Survey and 8 miles southwest of Groveton, abandoned in shale 7315 ft, having yielded water on retest of sand 6702-06 ft.

Woodbine Failures: E. B. Germany et al's Collins 1, Rains County, found water in sand, total depth 4510 ft. In Smith County, Ryan Consolidated Petroleum Corporation's Wright 1, 4 miles south of Crow, entered Woodbine series 5227 ft, elevation 308 ft, and quit in water sand at 5475 ft. Placid Oil Company's Weakley 1, C. C. Sealy Survey and 3½ miles northwest of Jewett,

drilled through the Woodbine to 5850 ft.

Hawkins Failure: Navarro Oil Company's Green 4, northwest corner 78-acre lease, J. P. Mosely Survey and on east edge of field, abandoned in Woodbine water sand 4892 ft.

COMPLETIONS

ANDERSON COUNTY: Cayuga—Carter-Gragg Oil Co's Royal-Cone 1, nwc 140-ac tr, Thos. Bristow sur, 180 bbls, ⅛-in choke, Woodbine sand 4070-80 ft.

ANDERSON COUNTY: Lone Lake—Texas Co.'s Woodhouse 4, 1220 ft, nwc No. 2, S. Sanchez sur 2-10, abnd, Woodbine, water 5300-20 ft.

CAMP COUNTY: Pittsburg—Talco Asphalt & Ref. Co.'s McKenzie-Shell 1, nec 50-ac tr, L. Williams sur, pumped 98 bbl 39.5-gr, shot 190 qts Travis Peak, 7978-8053, td 8203 ft.

HOUSTON COUNTY: Grapeland—Lone Star Gasoline Co-Trinity Gas Corp's Herrod-Finch 2, 272-ac tr, J. D. J. Procella sur, 115,000,000 ft gas, yielding 35 bbls distillate per million, Woodbine perf 5854-85 ft, td 5927 ft.

RUSK COUNTY: Pleasant Grove—L. O. McMillan et al's Ashby 1, s cor 20 ac, Geo. May sur, pumped 142 bbls oil and 300 bbls water initial, Woodbine perf 4056-61 ft, td 4086 ft.

TRINITY COUNTY: Wildcat—Magnolia's Wm. Cameron 1, 6000 ft from E and 1750 ft from S lines Henry Bond sur, sand 6699-6796 ft, tested water 6702-06 ft, abnd 7315 ft.

WOOD COUNTY: Hawkins—Bracken Oil Co-W. C. Windsor's Wells 1, se cor 20 ac lse, Geo. Brewer sur, 517 bbl, ¼-in ch, Woodbine perf 4730-40 and 4780-90 ft, td 4811 ft.

Humble's Shamburger 1-B, nwc 122½-ac lse, J. McAnulty sur, pumped 151 bbls daily, Woodbine perf 4889-4905 and 4846-64 ft, td 4921 ft; F. K. Williams 3, sw part 28½ ac of 181.76-ac lse, B. M. Hampton sur, 441 bbl ¼-in ch, Woodbine perf 4759-71 and 4805-13 ft, td 4837 ft.

C. H. Lyons-T. M. Armstrong-B. B. Orr's Boyd 1, c 10-ac J. G. Heard sur, 297 bbl ¼-in choke, Woodbine perf 4672-4754 ft, td 4768 ft.

C. L. McMahon et al's Snider 4, 107.8-ac lse, J. P. Moseley sur, 328 bbl, ¼-in ch, Woodbine perf 4606-36; 4640-56; 4748-70; 4780-4800 ft, td 4838 ft.

The Texas Co's Green 2, swc 28½-ac lse, J. B. Crain sur, 429 bbl ¼-in ch, Woodbine perf 4730-60; 4766-70, and 4814-26 ft, td 4882 ft.

WILDCAT STARTS

McLennan County—T. M. Smart et al's Connally 1, SWc 147-ac tr, I. Laver sur, 4 mi se McGregor, lcn.

Southwest Texas

Jackson County Wildcat Showing for Another Field

Jackson County's Marginulina play apparently was uncovering another reserve with casing set for completion of a well northeast of other producing areas in this formation. Sun field, Starr County, getting a 2 mile northeast extension and another Vicksburg sand, appears to be merging with the Kelsey district.

Lower Gulf Coast: W. S. Boyle et al's Rodeseney 1, between Ganado and Mauritz, Jackson County, ran electric log 7812 ft, took sidewall samples, recovered sand with oil odor 4970-92 ft, 5411-25 ft, 5510-23 ft, set 5½-in 5650 ft, to perf.

LaGloria Operators Committee's S. Unit 2 perf in 6200- and 6700-ft sands; completing gas-dist well; extends LaGloria, Brooks County, nearly 1 mi southeast.

Tide Water Associated Oil Co.'s S. A. Loan and Trust Co. 1, McAuley sur, 3½ mi se Sinton, San Patricio County, rec gas & dist on dst, set 5½-in cas 6687 ft, will perf for comp.

S. E. W. and Gulf Plains et al's S. A. Joint Stock Land Bank 1-c, w outpost Stratton, Jim Wells County, cored several oil sands, testing perf above 6600 ft.

Wilcox Trend: Tom Slick's Grissom 1, 1 mi s Caesar field, Bee County, dr sand in Wilcox 6523-58 ft; near 7500-ft contract, will set cas for test.

W. S. Boyle et al's Roether 1, 12 mi se Halletsville, dr to 8850 ft in Wilcox, wait on orders, may attempt completion.

Lower Rio Grande Valley: W. R. Davis' Jackson-Harrison 1, 9400 ft ne McAllen field, Hidalgo County, dr to below 8000 ft, testing 7600-ft distillate sand.

COMPLETIONS
CORPUS CHRISTI DISTRICT

HIDALGO COUNTY: Nichols—Royal O & G Co's Yturria 2-A, Lot 13, Royal sub, Pors 43 & 44, flowed 86.5 bbls 38.2-gr oil, no wtr, ⅛-in ch, 435 lbs tp, 860 lbs cp, gor 500-1, perf 3871-76 ft, td 3957 ft, sd/tr, dr to 3938 ft.

JACKSON COUNTY: Ganado—Texas' Mortgage 6, Sec 3, flowed 148.8 bbls 37.1-gr oil, some water, 3/32-in ch, 1020 lbs tp, 425 lbs cp, gor est 850-1, perf 6421-30 ft, td 6498 ft.

Lolita—Humble's L. Ranch 23-A, blk 164, LaWard sub, flowed 135 bbls 42.2-gr oil, no wtr, ⅛-in ch, 800 lbs tp, 1850 lbs cp, gor 545-1, top sand 6386 ft, td 6390 ft.

Magnolia's Ward (Mitchell est) 13, S. F. Austin Gr, flowed 115.68 bbls 26.6-gr oil, no water, 7/64-in ch, 450 lbs tp, 1000 lbs cp, gor 242-1, perf 5281-84, td 5292 ft.

Magnolia's Wesson & Cox 4, Blk 192, LaWard sub, flowed 154.4 bbls 33.6 gr oil, 7/64-in ch, 725 lbs tp, 1200 lbs cp, gor 506-1, perf 5932-35 ft, td 5938 ft.

Maubro—Darby's McCrory & Westhoff 1, A. M. Clare Lge, flowed 324 bbls 24.5 gr oil, ¼-in ch, 335 lbs tp, 925 lbs cp, gor 225-1, top sand 5218 ft, td 5233 ft.

Humble's Bonnett 1, Clare Lge, flowed 107.3 bbls 24.7-gr oil, ⅛-in ch, 475 lbs tp, 600 lbs cp, gor 168-1, top sand 5219 ft, td 5231 ft.

Navidad—W. S. Boyle's Wilkerson 1, J. Andrews Lge, e outpost, abd, td 5000 ft.

N. LaWard—Magnolia's Gordin 8, blk 11, Woolfolk sub, flowed 159 bbls 25.2 gr o, 7/64-in ch, 600 lbs tp, 750 lbs cp, gor 215-1, perf 5217-22 ft, td 5225 ft.

West Ranch—Humble's Vanderbilt-State 9, R. Musquez gr, flowed 165 bbls 31.4-gr oil, trace wtr, ⅛-in ch, 850 lbs tp, 800 lbs cp, gor 390-1, top sand 5790 ft, td 5786 ft.

Magnolia's N. R. West 202-A, V. Garcia gr, flowed 88.16 bbls 30.6-gr o, ⅛-in ch, 450 lbs tp, 875 lbs cp, perf 5593-5601 ft, td 5605 ft.

Renwar's Ledkins 1, blk 21, Bennett sub, sw thru perf 5761-66 ft, abnd, td 5770 ft.

West Ganado—Pure's Fowler 2, Rogers sur, flowed 119 bbls 24.6-gr oil, ⅛-in ch, 520 lbs tp, 240 lbs cp, gor low, perf 4750-75 ft, td 5550 ft.

JIM WELLS COUNTY: Seeligson—Sun's Miller 2, Sec 66, Haldeman sub, flowed 139.7 bbls 43.6-gr oil, 7-64-in ch, 1130 lbs tp, 1350 lbs cp, gor 764-1, perf 5951-56 ft, td 5970 ft.

Transwestern's Dunlap 8, SK & K sur 179, flowed 96 bbls 42.5-gr oil, 3/32-in ch, 1010 lbs tp, 1300 lbs cp, gor 707-1, perf 6105-10 ft, td 6250 ft.

JIM WELLS COUNTY: Wildcat—Bridwell's J. P. Blake 2, 400-ac lse, LaTrinidad Gr, 4.2 mi sw Ben Bolt twnsite, abnd, td 5780 ft.

NUECES COUNTY: Agua Dulce—S. E. Wilson Jr & Gulf Plain's Rivers 3, tr 3 sec 21, Scotts sub, flowed 135.37 bbls 41.2-gr oil, ⅛-in ch, 400 lbs tp, 1050 lbs cp, gor 720-1, perf 5707½-22 ft, td 6900 ft.

Minnie Bock—Phillips' Gandy (Willigan) 2, sec 55, Pauls sub, abnd, td 7510 ft.

SAN PATRICIO COUNTY: Midway—Phillips' Ivey 7, Sec K, Pauls sub, flowed 83 bbls 27.2-gr oil, plus 91.07% sw, ⅜-in ch, 150 lbs tp, 1000 lbs cp, perf 5330-32 ft, td 5385 ft.

VICTORIA COUNTY: E. Palacedo—W. L. Goldston's A. West 2, blk 19, H & P sub, flowed 84 bbls 39-gr oil, 5/64-in ch, 1125 lbs tp, 1625 lbs cp, gor 710-1, perf 6868-70 ft, td 6937 ft.

OLD WELL DEEPENED

VICTORIA COUNTY: McFaddin — Barnsdall's McFaddin 18, flowed 218.57 bbls 40.3-gr oil, ¼-in ch, 1575 lbs tp & cp, gor 1700-1, perf in sand topped 5731 ft, deepened 4399 to 6640 ft.

SAN ANTONIO DISTRICT

BEXAR COUNTY: Gas Ridge—Gas Ridge, Inc.'s, Hamilton & Swain 43, M. F. Rodriguez Gr, pumped 1.5 bbls 36-gr oil, show wtr, no gas, top pay 410 ft, td 475 ft.

Southwest's M. H. Covel 39, Lucas Munoz sur, pumped 2 bbls 34-gr oil, no wtr, no gas, top pay 395 ft, td 448 ft.

CALDWELL COUNTY: Tenney Crk—Ellmag's W. I. Pope 5, J. D. Rains sur, flowed 49.65 bbls 34-gr oil, 5% wtr, ¼-in ch, 70 lbs tp, 120 lbs cp, gor low, top Austin 2280 ft, td 2430 ft.

MILAM COUNTY: Wildcat—Trans-State Oil Co's Von Gonton 1, S. C. Robinson sur, 2 mi w Minerva-Rockdale fld, pumped 6 bbls 38-gr oil, no gas, Navarro sand oil odor 515-25 ft, td 685 ft.

WILLIAMSON COUNTY: Wildcat — G. C. Richardson's Kenedy 1, 1000-ac tr, S. Williams sur, 3½ mi e Thrall, abnd, td 1392 ft.

LAREDO DISTRICT

DUVAL COUNTY: Casa Blanca—M. L. Massingill's DCRC 2, sec 294, pumped 51 bbls 21-gr oil, gor 100-1, top sand 1067 ft, td 1102 ft.

M. L. Massingill's DCRC 3, pumped 47 bbls 21-gr oil, gor 150-1, top sand 1043 ft, td 1098 ft.

Government Wells—Sun's L. Wiederkehr 76-A, SE NE Sec 53, abnd, td 2956 ft.

Piedre Lumbre—Magnolia's DCRC 34, ne Sec 100, abnd, 2170 ft.

Wildcat—Jack Giblin's S. J. Rossen 1, sw Sec 48, 20 mi nw Freer, abnd, 1039 ft.

JIM HOGG COUNTY: Colorado—C. Andrade III's Trevino 1-K, Sec 623, abnd, 2975 ft.

Humble's King-Colorado 49-B, Las Moretas Gr, flowed 186.49 bbls 46.4-gr oil, 3/16-in ch, 325 lbs tp, 550 bs cp, gor 240-1, top sand 2872 ft, td 2881 ft.

Holbein—Highland's M. McLean 8-B, lot 10, sec 2, Holbein sub, pumped 145 bbls 25.8-gr oil, top sand 2814 ft, td 2823 ft.

Las Animas—Sollar's Marra McLean 9, Sec 7, Holbein sub, pumped 56 bbls fluid, 40% sw, rest 20.5-gr oil, perf 1816-19 ft, td 1822 ft.

Wildcats—Sam Cunningham's East et al 1, NW SW Sur 36, 15½ mi sw Hebbronville, abnd, 4220 ft.

J. F. Fouch's C. Palacios, Sec 51, El Randado Gr, 10 mi se Randado, abnd, 3502 ft.

McMULLEN COUNTY: S. Campana—Transwestern's McDowell 2, nw Sec 62, flowed 43 bbls 22.6-gr oil, 9/64-in ch, 460 lbs tp, 820 lbs cp, gor 1160-1, top Pettus 3024 ft, 5½-in cas 3044 ft, td 3055 ft.

STARR COUNTY: Sun—Sun's Montalvo 1-C, ne por 3870-ac lse, Los Retachez gr, 2 mi ne Sun field, flowed 154 bbls 46.7-gr oil, 7/64-in ch, 1485 lbs tp, 2060 lbs cp, gor 1663-1 perf 5386-89 ft, top sand in Vicksburg 5376 ft, 5½-in cas 5434 ft, td 6607 ft. Extends field, new sand.

WEBB COUNTY: Killam—O. W. Killam's Garcia-Villareal 23, Sec 1099, pumped 69 bbls 21-gr oil, no wtr, gor 100-1, perf 2001-5 ft, td 2070 ft.

Wildcat—W. R. Ritchey & W. C. McBride's Walker 1, E cor NE½ NW SW¼ Sec 1012, 7 mi n Oilton, top Mirando 2134 ft, top Bruni 2929 ft, abnd 3265 ft.

WILDCAT STARTS

Aransas County—Humble's Aransas Bay-State 1-B, tr 91, 2595 ft s Kent 1, 6 mi ne Rockport, lcn 9500-ft test.

Bastrop County—H. A. Pagenkopf et al's Bell et al 1, Albert Black sur, 14 mi nw Bastrop, ru 3250-ft test (Magnolia farmout).

Calhoun County—Rowan & Hope and Ranger's Wilson 2, nw cor 172-ac tr, V. Garcia Gr, 6 mi nw Port Lavaca, ru 6500-ft test.

Dimmitt County—Wellington Oil Co.'s Sullivan 1-B, S. W. Jones sur 606, 12,400 ft s Sullivan 1 gas well, lcn 3000-ft test.

Edward's County—Dan Auld et al's Hankins 1, sw nw 63, HE&WT 63, Blk F½ ru 6000-ft test.

Victoria County—John G. Mayo et al's Woodhouse 1, 357.5-ac tr, F. Dimmitt sur, 3½ mi s Victoria, sp 6500-ft test.

Texas Gulf Coast

Two Coastal Wildcats Indicate New Fields

Wildcats in Tyler and Chambers Counties indicate new fields; Newton County wildcat drilling deeper; two wells start drilling in new Stowell field.

Tyler County: A new Wilcox field apparently is in the making with Republic Producton Co. testing Republic-Houston-Cushing 1, 1¼ miles southwest of Joe's Lake field and 1 mile northwest of Stanolinds' discovery at Fred. Republic's well recovered 300 ft of oil, 1 stand oily mud and 1 joint fresh water on drill-stem test in Wilcox at 7950 ft, 50 ft below top. A second test was made Saturday after drilling and coring to 8000 ft, the total depth. Top of Wilcox is approximately 200 ft higher than corresponding sand in Fred discovery. It is believed the new structure has no connection with Joe's Lake or Fred.

Chambers County: Rowan Drilling Co. is testing W. H. Land 1, S. P. Donley survey, South Anahuac (Ash Point or Double Bayou) area. The well has been cleaning through small choke with casing pressure 1500 pounds, tubing 1000 pounds, flowing gas and wash water. Perforations were made at 9040-42 and 9034-37 ft.

Stowell: Sinclair-Prairie Oil Co. is preparing to start drilling on Gephart 1, quarter mile east of discovery well at Stowell, Jefferson County. Location is on 160-acre tract in TNO 157. Glenn H. McCarthy and Brown & Wheeler are drilling below surface pipe in Englin 1, half-mile north of McCarthy's Crawford 1 discovery. Producers at these loca-

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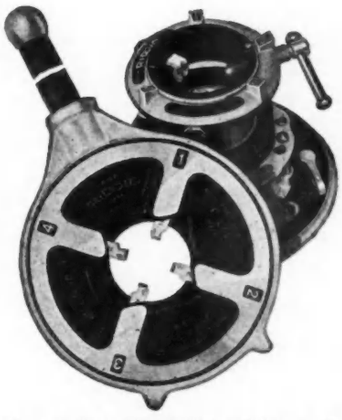

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tions will give material extensions to a field that is believed to be biggest Frio sand discovery of 1941 on Gulf Coast.

Newton County: H. C. Cockburn is drilling 1000 ft deeper from 9375 ft in Texas A. & M. College 1, Bleakwood area. Operations were taken over at this depth by Placid Oil Co. (H. L. Hunt) after finding gas shows in upper sands, although insufficient to make a producer. Cockfield was topped at 5861 ft, Wilcox 8751 ft.

Wildcats: Placid Oil Co.'s Moore 1, wildcat in Rosenberg area, Fort Bend County, is running low to Magnolia's Huntington 1 in same area. Placid's well logged gas shows at 8200 ft.

COMPLETIONS

BRAZORIA COUNTY: Danbury—Rowan Drilling Co.'s Jamison 15, 467 ft w Jamison 14, H. Austin sur, top pay 3432 ft, flowed 90 bbls ⅛-in chk, 20 hrs, tp 620 sp 1290, 25.4-gr, gor 100/1, td 3520 ft.

CHAMBERS COUNTY: Fig Ridge — Sun's Janet McCarthy 1, 1131 ft w of el & 467 ft n of sl HTB sur 93, top pay 8516 ft, flowed 169 bbls ⅛-in chke, tp 1325, gr 35.1, gor 632/1, td 8560 ft.

Texas Co.'s Broussard Trust 4, 660 ft fr s & e lines 640-ac tract, HTB sur, 94, flowed 841 bbls ¼-in chk, tp 1325, casing sealed, 35.2 gr, gor 701/1, Frio, td 8600 ft.

FORT BEND COUNTY: Clodine—Houston Oil's Thompson 3, 466 ft fr e l & 1399 ft from s l 835-ac tract Henry Brown sur. Top pay 7459 ft, perf 7501-04 ft, flowed 79 bbls 3/32-in. chk, tp 2000, cp 2775, 42,2 gr, gor 2751/1, td 7543 ft.

GALVESTON COUNTY: Gillock—Pan American's R. B. Peters 1, 998 ft w & slightly s highway 146, J. W. Lytle sur, perf 8830-46 ft, gas-distillate well, no gauge, td 8880 ft.

HARRIS COUNTY: Dyersdale—Cockburn Oil Corp.'s Burkitt 16, 4415 ft fr w l & 503 fr s l 1000-ac tract, J. Bundick sur, top pay 4052 ft, flowed 425 bbls ¼-in chk, tp 345, cp 460, 22.3 gr, gor 330/1, td 4072 ft.

Jack W. Frazier's M. O. Clander 2, 546 ft fr w l & 365 ft fr n & s lines lots 4 & 5 blk 15, W. Britton sur, top pay 4060 ft, flowed 168 bbls ¼-in chk, tp 75, cp sealed, 22.6 gr, gor 221/1, td 4076 ft.

Humble—McDonald & Hince's Lucy O'Neil 1, 30 ft fr s l & 30 ft fr w l lease, top pay 740 ft, pumped 5 bbls, td 770 ft.

Wilson Oil Co.'s Landslide 2, 288 ft fr n l & 962 ft fr w l 40-ac tract, Robert Dunman sur, top pay 673 ft, pumped 10 bbls, 18 gr, td 699 ft.

Pierce Junction—Hamill & Smith's Parsons 6, 25 ft fr n l & 43 ft fr e l 1-ac tract, BBB&C sur 1028, top pay 3398 ft, flowed 135 bbls 10/64-in chk, tp 260, cp 360, 28.3 gr, gor 200/1, td 3418 ft.

JEFFERSON COUNTY: Big Hill—Stanolind's Anderson 1, north flank gas discovery, 467 ft fr w l & 2333 ft fr s l 159-ac tract TNO sur 173, perf 8705-20 ft, made gas & distillate, shut in, td 9500 ft.

Lovell Lake—Humble's Pitts 2, 602 ft w No. 1, 383 ft fr n & s lines of lse. C. Hillebrandt sur, tp pay 7758 ft, flowed 307 bbls ¼-in chk, tp 575, cp 1350, 37.3 gr, gor 644/1, td 7791 ft.

ORANGE COUNTY: West Port Neches—Phillips' Stark 10, 4014 ft fr e l & 990 ft fr s l n½ Mary A. E. Hall sur flowed 110 bbls ⅛-in chk, tp 310, cp 450, 24.9 gr, gor 375/1, perf 4546-54 ft, td 4600 ft.

WHARTON COUNTY: Withers — F. W. Michaux' Pierce Est 17-A, 2253 ft n 28 deg w se/1 of league, C. Howard sur, top pay 5337 ft, flowed 129 bbls 5/32-in chk, tp 235, cp 625, gor 227/1, 25.7 gr, td 5400 ft.

Michaux' Pierce Est 45-A, 5053 ft n 28 deg w fr se/1 C. Howard sur, top pay 5282, perf 5282-90 ft, flowed 90 bbls ¼-in chk, tp 1350, cp 1150, 27 gr, gor 1750/1, td 5425 ft.

Texas Co.'s Pierce Est 82-B, 3922 ft n 28 deg w 2204 ft s 62 deg w fr se cor B lse, John Caldwell sur, top pay 5539 ft, perf 5539-41 ft, flowed 22 bbls 5/64-in chk, tp 200, cp 825, 25.6 gr, gor 510-1, td 5553 ft.

Texas Co.'s Pierce Est 62-C, (formerly gas well), top pay 5536 ft, pb to 5542 ft, perf 5536-40 ft, flowed 8 bbls 4/64-in chk, tp 1850 cp 1300, 25.4 gr, gor 3750/1, td 5560 ft.

Texas Co.'s Pierce Est 103-C, 933 ft n 62 deg e No. 83-C, William pettus sur 51, top pay 5347 ft, perf 5347-80 ft, flowed 102 bbls ⅛-in chk, tp 650, cp 525, 25.6 gr, gor 347/1, td 5385 ft.

WILDCAT STARTS

TYLER COUNTY—Republic Production's Republic & Houston Fee 1-1140, 5¾ mi se Spurger, Theophilus Cushing sur, 3547 ft fr n l & 10,524 ft fr w l of sur, pd 8000 ft.

WHARTON COUNTY—Norsworthy Production's W. B. Brewer 1, Morris & Cummings sur 7, ab 279, center of s½ of ne¼ sec 7, 2 mi s Hillje, fld, pd 7250 ft.

Louisiana Gulf Coast

Jefferson Davis Well Shows For Field; New Sands Opened

Wildcat in Jefferson Davis Parish prepares to make production test; deep sands opened in two coastal fields, second producer completed in Bastian Bay field.

Jefferson Davis Parish: Cities Service Oil Co. is making a production test on Lacassine Land Company 1, Thornweil prospect, after logging three sands showing gas and distillate, possibly oil. The well conditioned mud several days before running liner to near bottom, 10,323 ft. Deepest sand to be tested is at 10,160-75 ft, believed to be top of Marginulina section. Other sands were found at 9626-45 ft and 9840-55 ft. A gas well is practically assured, which possibly will lead to more drilling.

New Sands: One new sand has definitely been opened at Port Barre while another is testing in University field, following the trend of exploration around known fields in effort to open new reserves. Pan American Production Co. has completed Garland 12 on southwest flank Port Barre, St. Landry Parish, through perforations at 6638-60 ft for 342 barrels oil through 10/64-in choke. Tubing pressure was 1150 pounds, gas-oil ratio 257-1, gravity 36.5 degrees. Two other sands were found below this horizon, but showed gas and distillate. Salt was topped at 6937 ft, total depth 6956 ft.

William Helis and Louisiana Progress' Nelson 12, University field, East Baton Rouge Parish, is credited with flowing at rate of 488 barrels daily through 3/16-in choke from a sand below the field's regular sand bodies. Hole is bottomed around 10,000 ft with production coming from around 9654 ft.

Plaquemines Parish: Phillips Petroleum Co. has completed State 2-396, second and best well in Bastian Bay field. On one potential test, the well flowed 200 barrels through ⅛-in choke from perforations at 9350-64 ft. On the first test, the well produced at rate of 388 barrels in 21 hours through 3/16-in choke.

Wildcats: Amerada has abandoned St. Martin Land Co. 1, 19-9s-8e, at 12,501 ft, one of the deepest wells yet drilled in St. Martin Parish. Location is on St. Anthony Church prospect between Section 28 and Bayou Bouillon fields.

W. R. Davis has abandoned Voorhies 3, 72-9s-5e, on east flank Anse la Butte dome, St. Martin Parish. Attempt was last made to produce the well from perforations at 9744-58 feet.

Vermilion Parish: Major lease owners in the Erath field are reported working out plans to construct a recycling plant in the area. As planned, the plant will cost approximately $2,000,000.

COMPLETIONS

CALCASIEU PARISH: Edgerly — Emerson Oil's Fairchild 1, 1280 ft e & 1017 ft c nwc 28-9s-11w, perf 3108-40 ft in Miocene, flowed 104 bbls day open chke, 37% water, 19.5 gr, td 3148 ft.

Sulphur—Union Sulphur's Fee 881, 190 ft e & 320 ft n c 29-9s-10w, 29 bbls day gas lift, perf 3513-25 ft, reperf 3180-3200 ft, td 3598 ft.

CAMERON PARISH: Wildcat — Phillips' Miami 2, Chenière Ridge, ¾ mi ne discovery, 660 ft fr n & e/1 sw 12-14s-6w, sand showing oil 8476-97 ft in Miocene, ran log to 10,175 ft, perf 10,180-90 ft, flowed 15.5 bbls distillate 7/32-in chk, gor 300,000/1, td 10,510 ft.

Cameron Meadows—Burton-Sutton's Cameron Parish School Land 27, 3378 ft w & 203 ft n se cor 16-14s-13w, td 6870 ft, abnd.

IBERIA PARISH: Fausse Point — Sun's Planters Lbr 10, 800 ft w & 3440 ft s ne cor 34-11s-8e. Ran electric log 6400 ft & 4807 ft, took sidewall samples, drilled to 8144 ft, stuck pipe, plugged back to 4435, drilled to 5429 ft, ran electric log td 6537 ft, abnd.

LAFOURCHE PARISH: Chacahoula — Sun's Cypress 5, 950 ft fr n & 1509 ft from e/1, 75-15s-15e. Perf 7905-10 ft & squeezed, reperf 7795-7800 ft & squeezed, reperf & completed 195 bbls 12/64-in chk, tp 700, casing sealed, td 8310 ft.

PLAQUEMINES PARISH: Bastian Bay — Phillips' State 2-396, nw nw 46-20s-29e. Perf 9350-64 ft in Miocene, flowed 220 bbls ¼-in chk, tp 1700, 33 gr, td 9900 ft.

RAPIDES PARISH: South Catahoula Wildcat Discovery—M. H. Marr & Phillips' Eota Realty 1, 660 ft s & w of center ne 14-4n-3e, 8000-ac blk, top Wilcox 3962 ft, Midway 7015 ft, perf for several tests in Wilcox before reperf 5149-54 ft, swabbed ww & oil. Pumped 80 bbls, td 7086 ft.

ST. MARTIN PARISH: Wildcat—Amerada's St. Martin Land 1, St. Anthony Church prospect, between Section 28 & Bayou Bouillon fields, 1980 ft w & 660 n se cor 19-9s-8e. Ran electrical log 10,500 ft, td 12,501 ft, ran log, abnd.

Anse La Butte—Stanolind's Emelie-Ed Bergeron 1, 9899 ft along sw/1 sec 46 fr w cor thence 120 ft nw at ra in 46-9s-5e. Perf 4672-4710 ft, flowed 119 bbls 10/64-in chk, tp 760, cp 750, td 6150 in salt.

W. R. Davis, Inc.'s Voorhies 3, Anse La Butte east flank, 467 ft s Voorhies 2 flank discovery in 72-9s-5e. Sand showing oil 9740-61 ft, perf 9744-58 ft, swabbed wash water & oil, acidized & swabbed again, no flow, td 9802 ft, temporarily abnd.

ST MARY PARISH: Belle Isle—Sun's Belle Isle 6-350, 2140 ft n & 2987 ft w se cor T-17s-10e in 28-17s-10e, td 544 ft in salt, abnd.

CAMERON PARISH: West Hackberry—Stanolind's Gulf Land Co. 32, 305 fr w & 4100 ft fr s/1 15-12s-10w. Perf 9830-42 ft, flowed 235 bbls some water, squeezed & reperf 9830-42 ft, flowed 187 bbls ¼-in chk, tp 145, td 10,191.

Stanolind's State-Black Lake 61, 1644 ft fr e & 3280 ft fr s/1 13-12s-10w, perf 9450-80 ft, flowed 474 bbls 3/16-in chk, tp 1125, csg sealed, gor 594/1, td 9855 ft.

North Louisiana

Five Locations Follow Strike at Haynesville

Five locations for Pettit-lime tests in Haynesville field, Claiborne Parish, La Salle Parish wildcat completed successfully after squeeze job.

Haynesville: Five locations, including three by Ohio Oil Company, which has large holdings in field, staked during week at Haynesville, Claiborne Parish, to seek production in newly opened Pettit (basal Glen Rose) line horizon. Two wells now producing oil from this horizon.

La Salle Parish: Carter and Phillips' Tensas Delta D-1, SE NW 25-6n-3e, La Salle Parish wildcat, successfully squeezed off salt water that showed in first test in Wilcox, and well was completed after new perforations at 4294-98 ft flowing 200 barrels oil daily.

Tensas Parish: Carter Oil Co.'s Rhodes 1, NW NW 29-9n-10e, Tensas Parish wildcat, swabbed oil and wash water from Wilcox after perforating at 3394-3405 ft, later squeezed off salt water for another test.

Logansport: Southern Production Co. acquired entire holdings of Superior Oil Co. of Tulsa, in Logansport field, DeSoto Parish, comprising 1200 acres and one gas well.

Wildcats: J. B. Claypool assigned 3500-acre block township 6 north, range 9 east, Concordia Parish, to Devonian Oil Co.; C. H. Murphy, Jr., of El Dorado bought in fee 42,500 acres from Deltic Investment Co., in townships 18

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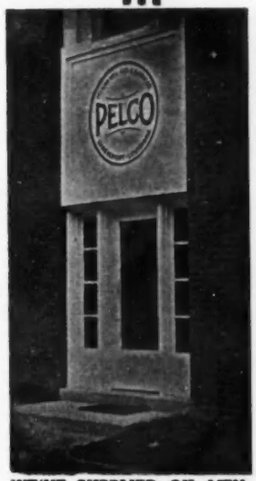

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and 20 north, ranges 11, 12 and 13 east, Madison Parish; Carter Oil Co. selected three blocks for drilling from 64,000-acre geophysical option on Frost Lumber Industries lands in townships 5, 6 and 7 north, ranges 6 and 7 west, and already has 12,000 acres in township 7 north, ranges 5 and 6 west, all in Natchitoches Parish; Gulf Refining Co. leased 2500 acres township 21 north, range 3 west, Union Parish.

Arkansas

LaFayette County Wildcat Cores Smackover Saturation

Wildcat in La Fayette County, that logged 215 ft of saturation tested; another test shows oil at Macedonia; Mount Holly to be drilled rapidly.

La Fayette County Wildcat: Barnsdall Oil Co.'s Bond 1, NW NW 11-15-24, was being tested last week at 6563 ft; logged 215 ft of saturated Smackover lime from 6300 to 6515 ft; top Smackover 6290 ft; good porosity and permeability, porosity approximating 20 percent; API gravity around 38 degrees from core laboratory truck.

Macedonia: Another oil well loomed at Macedonia, Columbia County, in McAlester Fuel Co.'s Nipper Unit 1, N 12 SW 16-18-21, preparing to test, total depth 8965 ft, top porosity, Smackover lime, 8912 ft. Two other tests there drilling, one other active location.

Mount Holly: Second test at Mount Holly, Union County, newest Smackover lime oil field, topped porosity at 7160 ft, coring 7180 ft in Atlantic's Mary Davis B-1, NW SW 10-17-18. Lion Oil Refining Co. has agreed to take production from Mount Holly discovery well, paying posted price for this grade at the well and absorbing trucking charges to Lion's Schuler pumping station. Development at Mount Holly expected to proceed rapidly as most of leases there are five-year leases taken in spring of 1937.

Mississippi

Plan Test in Sharkey; Leasing in Alabama, Florida

Tentative wildcat location staked in Sharkey County, Mississippi; exploratory test for Walker County, Alabama; leasing in Florida.

Sharkey County: Three miles southwest of Carey, Sharkey County, Mid-States Oil Corporation secured a wildcat block and made tentative location for Klaus Brothers 1, SE SE 18-11n-7w, to spud by February 26.

Walker County, Alabama: After many weeks of geophysical exploration Superior Oil Co. of California is planning an exploratory test in township 13 south, range 8 west, Walker County, Alabama, to check data.

Florida: Gulf Refining Co. has secured approximately 200,000 acres in scattered leases in DeSoto, Hardee, Highland and Manatee Counties where Humble Oil & Refining Co. and Sun Oil Co. are also leasing.

Michigan

Continental Gas Well First in Calhoun County

Continental Oil Co. completed its initial Michigan wildcat, Turner 1, NE SE NE 15-3s-4w, Calhoun County, for 10,510,000 ft gas day in shallow 1609 ft Traverse lime horizon for first commercial producer in county. Company plans further exploration in district where heavy Core-geophysical campaign was conducted earlier. Turner 1 originally intended for 5000 ft St. Peter sand test.

Arenac County: Don Rayburn shut down Hobart 2, NE NE NE 9-20n-4e, first Clayton field deep test, 4191 ft with possible plugback to 3710 for re-test Monroe lime saturation.

Reed City: Opened in May this year drill up of proven Reed City area now estimated 80 percent completed with 116 Monroe lime 3500-3600 ft producers on 20-acre units. No active drilling extensions with inside operations and edge drilling holding activity.

COMPLETIONS

ALLEGAN COUNTY: Casco—Lang & Lewis' Dow 1, se ne nw 24-1n-16w, abnd 1185 ft. Clapsaddle & Harris' Killian 1, ne ne se 24-1n-16w, abnd 1160 ft.

Hopkins—Muskegon Dev. Co.'s Knorr 2, se nw sw 18-3n-12w, pumped & flowed 309 bbls, acidized Traverse lime 1622-27 ft, td 1627 ft. Clifford Perry's Schafrer 3, ne se nw 18-3n-12w, pumped 60 bbls, acidized Traverse line 1571-73 ft, td 1575 ft. Perry, Gould & Cross' Schafer 9, nw sw ne 18-3n-12w, flowed 330 bbls 18 hrs, acidized Traverse lime 1543-50 ft, td 1552 ft.

ARENAC COUNTY: Adams—Don Rayburn's McTaggart 3, ne ne ne 26-19n-3e, pumped and flowed 119 bbls, acidized Dundee lime 2818-2965 ft, td 2971 ft.

CALHOUN COUNTY: Albion-Wildcat — Continental's Turner 1, ne se ne 15-3s-4w, new pool, Traverse lime 1599 ft, gas 1605-09 ft, nip 10,510,000 ft, td 1609.

CLARE COUNTY: Winterfield—Taggart Bros. Co.'s Richardson 35, c sw 20n-6w, flowed 2,710,000 ft gas Stray sand, td 1333 ft. Tyler 36, c ne 29-20n-6w, flowed 4,790,000 ft gas Stray sand, td 1356 ft.

GLADWIN COUNTY: Beaverton—Sun's Keller 2, c w½ ne ne 35-17n-2w, pumped and flowed 140 bbls, acidized 3790-80 ft, td 3881 ft.

IOSCO COUNTY: Wildcat—E. A. Robert's Spencer 1, nw ne se 15-23n-5e, Plainfield Twp, abnd 3465 ft.

MONTCALM COUNTY: Wildcat — Columbia Gas & Oil Co.'s Playmour 1, c e½ se se 11-10n-7w, Sidney Twp, Marshall sand 1126 ft, Dundee lime 3246 ft, abnd 3315 ft.

OSCEOLA COUNTY: Lincoln—Taggart Bros. Co.'s Kimball 32, c sw 8-18n-10w, flowed 6,230,000 ft gas, td 1271 ft. Grill 31, c sw 16-18n-10w, flowed 5,050,000 ft gas, td 1207 ft.

Pure's Richards B1, c s½ se sw 19-18n-10w, flowed 379 bbls first hr, Monroe lime 3562-99 ft, td 3569 ft. Dunn 3, c s½ nw se 20-18n-10w, flowed 1211 bbls, Monroe lime 3497-56 ft, td 3556 ft.

Ohio's Gabel 2, c s½ ne sw 31-18n-10w, flowed 90 bbls first hr, Monroe lime 3603-90 ft, td 3690 ft. Gocha-Hewitt 2, c s½ sw nw 32-18n-10w, flowed 151 bbls first hr, Monroe lime 3591-3602 ft, td 3602 ft.

C. W. Teater's Hewitt-Howman 2, c n½ ne sw 32-18n-10w, flowed 201 bbls first hr, Monroe 3500-90 ft, td 3599 ft.

ROSCOMMON COUNTY: Roscommon — Ohio & Hilliard's State A1, c s½ se ne 33-21n-3w, flowed 178 bbls first hr, Traverse lime 3428-3500, td 3506 ft.

Sun's State A1, c n½ ne sw 33-21n-3w, flowed 161 bbls, Traverse 3420-25, td 3426.

VAN BUREN COUNTY: Bloomingdale — George L. Kernodle's Katts 1, se sw se 1-1s-14w, pumped 16 bbls, acidized Traverse 1249-60 ft, td 127 ft.

Bridger-Basin's Stadler 1, nw se sw 1-1s-14w, pumped 30 bbls, acidized Traverse 1266-67 ft, td 1267 ft. Fortney & Broughton's Reed 2, ne se se 2-1s-14w, pumped 75 bbls oil 10 bbls water, acidized Traverse 1290-92 ft, td 1296 ft. Clapsaddle & Harris' Cook 1, ne ne ne 10-1s-14w, abnd, Traverse 1320 ft, td 1324 ft.

CASS COUNTY: Calvin—S. S. Phillip's Carter 1, ne se se 1-7s-14w, pumped 16 bbls, acidized Traverse 950-60 ft, td 968 ft.

WILCAT STARTS

ALLEGAN COUNTY—Herb Caley's Sisson 1, nw nw sw 14-2n-16w, dr.

MIDLAND COUNTY—Sun's McNett 1, c n½ ne se 15-15n-1w, dk.

OTTAWA COUNTY — Associated & Southwest's Blackmet 1, ne se ne 15-8n-14w, rig.

Stratigraphic Type Oil Fields A Symposium

This voluminous edition consists of a number of papers presented to the American Association of Petroleum Geologists and edited by A. I. Levorsen, chairman of the research committee of the association. Complete coverage of the principal stratigraphic oil fields of the United States is included, each field description accompanied by various maps and illustrations of the area. Several large-scale maps are included in a pouch on the inside of the back cover to provide details and contours of special localities.

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scription of oil fields, with their history, their geology, their production, and their economics, which factors are recognized as the backbone of the literature of petroleum geology. It furnishes a factual background on which a further approach may be made to the causes of oil and gas accumulation and also a basis for the reasoning necessary to future oil-field discovery. As such, it will undoubtedly take its place beside earlier published symposiums on typical American oil fields.

The work of the editors of this volume has not been confined to editing the articles but has also included their solicitation. The plan was to have, as nearly as possible, an equal geological and geographical distribution of fields described. Articles describing several fields were eliminated for various uncontrollable reasons; however, the volume represents a substantial beginning on the task of getting material of this type into print so that it is available to students of the problems of petroleum geology.

The book is published and distributed by The American Association of Petroleum Geologists in Tulsa, Oklahoma.

California

Fresno County Extension Better Than Discovery Well

Fresno County extension of new area looks promising; opening of small pool in Kern County proven; Tulare County test slated for abandonment.

Fresno County: Wilshire Annex Oil Co.'s extension test, No. 21-26, 26-21-15, Jacalitos Hills area, has been bottomed at 3713 ft after coring 33 ft of oil sand, top of which was placed at 3680 ft. Location is quarter mile northwest of discovery well. Increased permeability and thicker sand body logged indicates improvement on discovery well.

Kern County: J. Paul Getty has completed Portals 1 wildcat, 5-30-29, Edison area, flowing by heads at estimated rate 150-200 barrels daily, 19-gravity oil cutting 1.6%. Top of Wicker sand was placed at 4210 ft, top of carbonaceous silt at about 3026 ft. Bottom was at 4255 ft with water string set at 4120 ft. Completion marks new discovery for this area.

Tulare County: Richfield Oil Corp. has bottomed Hewitt 1 wildcat test, Sec 1-21-25, Tipton area, at 3486 ft after coring top of basement complex at 3470 ft. Company will take sidewall samples preliminary to abandonment.

COMPLETIONS

Kern County: Greeley—General Mitchell 2, n ne sw 1-29-25, no test, Rio Bravo 11,474-99 ft, td 11,500 ft.

Mountain View—Texas Co.'s Mott 1, se se 9-31-29, 163 flow Miocene 5850-6169 ft, td 6229 ft.

Kings County: Kettleman North Dome—KNDA's 32-P, se nw 2-22-17, flowed 229 bbl Eocene 9708-10,040 ft, td 10,040.

Los Angeles County: Coyote West—Standard s Murphy Coyote 127, sw sw 18-3-10, pumped 38 bbl 3902-4240 ft, td 4240 ft.

Newhall-Potrero—Barnsdall's RSF 28, se 27-4-17, flowed 1427 bd rate, 32-in bean, perf Miocene 7390-7655 ft, td 7657.

Wilmington—Selegna Petroleum Co.'s No. 15, nw Denni & Mahar sts, pumped 102 bbl perf Ranger 3236-3555 ft, td 3557 ft. Wilmith Petroleum Co.'s Wilmington Comm. 1; nw "K" & Marine sts, pumped 70 bbl perf Ranger 2990-3100 ft, td 3704 ft.

Santa Barbara County: Santa Maria Valley

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Yield Point	35,000 to 45,000	Thermal Conductivity (C.G.S.)	0.030
Elongation in 2"	25.0 to 40.0%	Specific Gravity	7.85
Reduction of Area	25.0 to 40.0%	Specific Heat—Room Temperature	0.12
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ORIGINAL AMERICAN LICENSEE GEORGE FISCHER (SWISS CHAMOTTE) METHOD

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Signal's Yelkin 10, 26-10-34, flowed 500 bbl, perf Miocene 4208-4652 ft, td 4653.

Union's Stinson 6, w n ne 28-10-34, pumped 400 bbl perf 4593-5058 ft, td 5060 ft.

Ventura County: Cat Canyon—Union's Bell 12, 27-9-33, flowed 1257 bbl 2-in choke, top Miocene 5150 ft, td 5580 ft.

Ventura Avenue—British American Oil Producing Co.'s Hartmann 13, flowed 783 bbl 2-in choke, perf 8491-9799 ft, td 9800 ft. Shell's Edison 38, flowed 1102 bbl perf 8338-8855 ft, td 8860 ft. Tide Water's Lloyd 84, pumped 58 bbl perf 6752-7325 ft, td 7325 ft.

WILDCAT STARTS

Kern County—R. R. Bush Oil Co.'s Rodgers-Jones 1, 35-26-27, Mt. Poso area, lcn.

Santa Barbara County: Fickert Oil Co.'s Fickert 1, 8-7-33, Lompoc area, rig.

West Virginia

COMPLETIONS

Boone County—Owens Illinois' Cassingham 39, 80,000 gas, 2570 ft.

Calhoun County — Hope's Bennett 8583, 2,270,000 gas, 2087 ft; Gainer 8567, 9 bbls and 600,000 gas, 2040 ft; Moss 8573, 280,000 gas, 1829 ft. Godfrey L. Cabot's Hardman 11, 200,000 gas, 2098 ft; Parsons 2, 660,000 gas, 1945 ft. South Penn's Rothlisberger 4, 5 bbls, 1777 ft; Sharp 8, 10 bbls 2124 ft. Creed Yoak's McDonald 2, 40 bbls, 2300 ft.

Clay County—Pittsburgh & W. Virginia Gas Co.'s Elk River 7793, 490,000 gas, 2169 ft.

Doddridge County—Edmund Tate's Jones 1, 100,000 gas, 1755 ft.

Gilmer County—Hope Natural Gas Co.'s Gainer 8578, 100,000 gas, 2040 ft.

Kanawha County—Godfrey L. Cabot, Derrick 1, 5,210,000 gas, 5136 ft, Delmos Hill's Hill 1, 10,000 gas, 4215 ft.

Lincoln County—United Fuel's Lovejoy 5057, 130,000 gas, 3526 ft.

Marshall County—Cameron Light & Heat's McConaughey 2, 150,000 gas, 3100 ft.

Putnam County—Teays Valley's Davis 1, dry, 2468 ft.

Ritchie County—Watson Oil & Gas Co.'s Haddox 1, 750,000 gas, 1825 ft; Cox 1, 190,000 gas, 2265 ft. McDonough's Mason 3, dry, 1410 ft. Rinehart's Moore 11, dry, 1570 ft. South Penn's Kemp 1, 650,000 gas, 2057 ft.

Taylor County — Pittsburgh & West Virginia's Mason 6124, 180,000 gas, 1127 ft.

Wayne County — Industrial Gas' Booth 1, 30,000 gas, 3008 ft.

Wetzel County — Manufacturers Light & Heat Co.'s Estep 3617, dry, 3330 ft. W. F. Burgess' Burgess 1, 110,000 gas, 2240 ft.

Wirt County—Lemon & Collins, Beckner 2, 2 bbls 365 ft.

OLD WELLS DRILLED DEEPER

Braxton County—Pittsburgh & W. Va. Gas Co.'s Howell 7542, 20,000 gas, 2137 ft.

Gilmer County — Hope Natural Gas Co.'s Raynolds 6783, 3 bbls, otd 1702 ft, td 1921 ft.

Lincoln County—Kanawha Gas Co.'s Chandler 1, 790,000 gas, td 3601 ft. Mud River Gas Co.'s Adkins 1, 190,000 gas, otd 2240 ft, td 3600 ft. Bulger Gas Co.'s Mullins 1, 80,000 gas, otd 2170 ft, td 3602 ft.

Marion County—Thomas Bros. & H. C. Wilson's Thomas 1, 20,000 gas, otd 2261 ft, td 3312 ft.

Monongalia County—Manufacturers Light & Heat Co.'s Shriver 3615, 720,000 gas, td 3354 ft.

Ritchie County—F. S. Deem's Stephens 12, 30,000 gas, td 2008 ft.

Ohio

COMPLETIONS

Ashland County—Roy Stewart's Long 1, dry, 3071 ft. Hoag et al's Aber 1, dry, 704 ft. Wanda Keiffer's Scott 1, gas, 661 ft.

Athens County—Wickens et al's Meeks 5, 80 gas, 921 ft. Bern Oil & Gas, Kenney 3, dry, 1143 ft.

Coshocton County—Mauller & Patton's Ryan 1, 260,000 gas, 3153 ft. Preston Oil's Donaker 7, 82 bbls, 3130 ft.

Gallia County—Portage Producer's Cambria Clay Products 21, 2,600,000 gas, 3040 ft.

Knox County—H. E. Perkins' Lemley 2 dry, 903 ft, McMillan 2, dry, 2877 ft. Bud Fisher's Harmer 1, 130,000 gas, 2812 ft.

Licking County — Natural Drilling Co.'s Booth 1 dry, 2760 ft. D. C. Deem et al's Fee 1, 800,000 gas, 2502 ft. Geo. Locknette et al's Gittings 2, 550,000 gas, 2564 ft. Pat Oil & Gas Co.'s Newlon 4, 8 bbls, 747 ft. Ridgeway et al's Richards 6, 5 bbls, 831 ft.

Loraine County—Edson & Son's Szabo 1, dry 2452 ft.

Lucas County—J. S. Bailey's Jeffers 1, dry, 1819 ft.

Medina County—Thornton Producing Corp.'s Ross F17, 5 bbls, 468 ft; Ross F22, 5 bbls, 438 ft; Ross F23, 5 bbls, 435 ft; Ross F24, 5 bbls, 470 ft. R. C. Holmes et al's Hostettler W19, dry, 524 ft. Hoag et al's Siler 1, dry, 2870 ft. Wm. Dempsey's Wallace 2, 240,000 gas, 3583 ft.

Meigs County—Roy Proffitt et al's Wickline 1, dry, 510 ft; Powell 1, dry, 900 ft. Ohio Fuel's Will 1, dry, 1788 ft. M. M. Nelson's Kennedy 1, 160,000 gas, 684 ft. H. B. Walker Co.'s Person 1, 100,000 gas, 1659 ft.

Monroe County—H. B. Walker's English 15, 1 bbl, 1444 ft. Clem Peters' Fee 3, 500,000 gas, 1933 ft. Gold Crown Oil Co., Christy 7, 70,000 gas, 1497 ft.

Morgan County—Williams Bros.' Cheadle 1, dry, 950 ft; Wood 1, 70,000 gas, 1451 ft; Greathouse 2, dry, 950 ft. D. T. Orndoff's Glass 4, gas, 1280 ft. Swingle et al's Bush 2, 180,000 gas, 1116 ft.

Muskingum County—Industrial Gas Corp.'s Finley 2, 15 bbls & 200,000 gas. Pure Oil Co.'s Moore 1, 1,300,000 gas, 4221 ft. Ohio Fuel Co.'s Floyd 2, 80,000 gas, 4031 ft.

Noble County—Chasteville Oil & Gas Co.'s Gray 2, 30,000 gas, 1351 ft. R. L. Smitherger's Kilzer 5, 10,000 gas, 1306 ft. Tilton Warne's Ruby 1, 40,000 gas, 1535 ft. E. H. Crock Oil Co.'s Crum 1, 5 bbls, 568 ft.

Perry County—Kachelmacher Estate's Hemlock 1, dry, 3669 ft. Preston Oil Co.'s Miller 1, 450,000 gas, 2810 ft. Dittoe et al's Reed 1, dry, 3061 ft. Palm Oil Corp. et al's Yaney 1, 25 bbls & 1,250,000 gas, 2806 ft. Pure's Williams 1, 90 bbls, 3288 ft.

Portage County—East Ohio's Anderson 1, dry, 4627 ft.

Stark County—East Ohio's Kleinheinz 1, 800,000 gas, 4568 ft. Stark Brick Co.'s Fee 1, dry, 4999 ft.

Summitt County—Ohio Fuel's Hadlock 1, 500,000 gas, 3469 ft.

Washington County—C. D. Uhl's Huffman 13, 2 bbls, 858 ft. Henderson Oil's Ruppert 43, 3 bbls, 670 ft. Hall & Henning's Hall 2, 340,000 gas, 1200 ft. Fifteen Oil & Gas Co.'s Schenkel 8, 2 bbls & 150,000 gas, 1476 ft. Homer Burkhart et al's Schenkel 2, 2 bbls, 1500 ft.

Wayne County—Ohio Fuel's Tuttle 1, dry, 3048 ft.

INPUT WELLS

Medina County—R. C. Holmes et al, Hostettler W 24, 506 ft.

OLD WELLS DRILLED DEEPER

Washington County—Waxler's McDermitt 1, 50,000 gas, 2087 ft. Cliff Oil & Gas Co.'s Clift 1, dry, otd 1750, td 3007 ft. Albert Jahn et al's Taylor 1, 1½ bbls, 851 ft.

Athens County — Ohio Fuel's Justice 1, 2,740,000 gas, 1268 ft.

Pennsylvania

COMPLETIONS

Armstrong County—Apollo Gas' Smith 2, 140,000 gas, 1661 ft. T. W. Phillips' Lanning 1, 47,000 gas, 3460 ft. Peoples Natural Gas Co.'s McCauley 1, 50,000 gas, 3400 ft.

Clarion County — Penna. Fuel's George 5, 90,000 gas, 2428 ft.

Greene County—Peoples Natural Gas Co.'s Eaton 1, 30,000 gas, 3390 ft. Manufacturers Light & Heat Co.'s Woods 3, 30,000 gas, 3481 ft.

Westmoreland County—Apollo Gas' Chovanes 1, 50,000 gas, 2519 ft. Peoples Natural Gas Co.'s Schaffer 1, 10,000 gas, 3810 ft.

New York

Company, Well and Location	Init. Prod. Bbls.	Depth

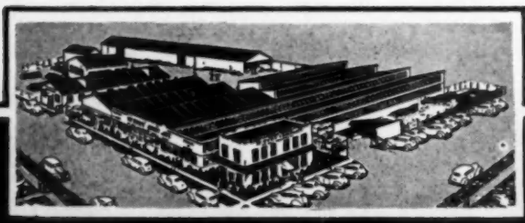
COMPLETIONS

Allegany County—

Messer Oil Co., Vosburg farm, Bolivar	7	1365
Vosburg farm, Bolivar	7	1371
R. B. Moore et al, Curtis farm, Bolivar	5	1374
W. J. Richardson Est. No. 3, Gadsby farm, Bolivar	8	1474
Producers Oil Corp. "A," Keller-Scott farm, Wirt	10	1070
Brothers Oil Co., Crandall farm, Bolivar	5	1382
Ebenezer Oil Co., Mecklin farm, Alma	6	1088
McEnroe & Brown, Witter farm, Alma	7	1080
Dick Oil Co., Bradley farm, Bolivar	6	1458
Almy & Pierce, Owens farm, Bolivar	6	1384
Mitchell-Harder et al, Bradley farm, Bolivar	5	1352
Hopkins, Short Bros., et al, Clark farm, Independence	6	1077
H. W. Patterson et al, Fuller farm, Amity	5	849
Messer Oil Co., Koehler farm, Genesee	6	1341
E. J. Wilson, Burdick farm, Wirt	8	1413
Sloan & Zook, Green farm, Genesee	6	1370
New York Oil Co., Brown farm, Bolivar	7	1377
Wikson Oil Co., Wales farm, Genesee	5	1336

WATER INTAKE WELLS

Messer Oil Co., Vosburg farm, Bolivar	..	1379
Bradley Prod. Corp., Nobles farm, Bolivar	..	1336
South Bolivar Oil Co., McKelvey farm, Bolivar	..	1362
Producers Oil Corp. "A," Keller-Scott farm, Wirt	..	1063
N. V. V. Franchot, Emerson farm, Scio	..	1167
C. H. Christman & Son, Middaugh farm, Scio	..	1381
Curt Oil Co., Williams farm, Alma	..	1420
The Otsquago Corp., Pike farm, Alma	..	1426
Marsh Oil Co., Fay farm, Bolivar	..	1422
McEbenwood Oil Co., Lynch farm, Andover	..	1279
L. H. Thornton et al, Brown farm, Alma	..	1368
H. W. Patterson et al, Browning farm, Scio	..	629
Browning farm, Scio	..	678
L. & D. Oil Co., Browning farm, Scio	..	573
Rico Oil Co., Alger-Baldwin farms, Scio	..	722



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MEN IN THE INDUSTRY'S NEWS

R. T. GERMAN, who has been a production superintendent for Magnolia Petroleum Company for more than a score of years, has been placed in charge of the Texas-New Mexico producing division with headquarters at Dallas. He succeeds Jos. Kilchenstein, division superintendent who qualified for retirement January 1 with 43 years of continuous service in drilling and producing branch, including 30 years as an employe of Magnolia in Texas.

German is a native of Athens, a small Texas town that is the birthplace of numerous successful oil men. He began as a field worker for Magnolia at Ranger in January, 1919. Within six months he was shifted to Breckenridge as a lease foreman, then advanced to superintendent before assuming charge of the company's shallow development in the Archer City district in October, 1924. When the company launched its large-scale development in West Texas in 1928, he was given the assignment with headquarters at Odessa, where he remained until his transfer to Dallas headquarters last September as assistant division superintendent.

Kilchenstein served his apprenticeship as a field worker for South Penn Oil Company, starting at Mannington, West Virginia, in 1898 under Frank V. Faulkner, who later moved to Texas and served as manager of production for Magnolia for more than a score of years before retiring in 1931. When Magnolia entered North Texas as an active operating unit in 1912, Kilchenstein was employed as superintendent for the Electra district. Five years later he was promoted to superintendent of the Texas division, with New Mexico included in 1929, and retained this position until his retirement. He will continue to reside on his farm near Dallas.

ADDISON YOUNG and Max David, geologists for Landreth Production Corporation, which recently disposed of controlling interest in the bulk of its properties to Stanolind Oil & Gas Company, have established an office at Midland, Texas, to operate as consulting geologists.

MORGAN E. ROBERTS, 47, West Texas district geologist for The Pure Oil Company, died December 30 of a heart attack at his Fort Worth residence. He was a native of Wisconsin, and received degree in geology from University of Wisconsin in 1917, then served two years with the Army in France. He was in charge of field work in Morocco and Algeria for Whitehall Petroleum Corporation of London in 1920-22, then served two years in Tampico, Mexico, before joining The Pure Oil Company in 1924.

W. G. CORBITT has been appointed head of the Wyoming division of International Cementers, Inc., with headquarters at Casper. L. R. Austin, formerly in charge of the Wyoming division, has been transferred to Brownfield, Texas, where he will cooperate with Paul Lewis in the management of the West Texas division of International Cementers, Inc.

S. J. BRADFORD, Humble Oil & Refining Company district electrical foreman at Darrow, Louisiana, has been transferred to the Bayou Sale district. Other Humble transfers are: H. H. Johnson, district transportation foreman, from the Gulf Coast trucking terminal to the West Texas division as division transportation foreman; G. F. Abendroth, district petroleum engineer, from Potash district to Darrow district; Horatio Durst III, district petroleum engineer, from Darrow district to Potash district; A. O. Miller, from Tomball district to Gulf Coast division office as safety engineer; J. H. Cuthrell, safety engineer in Gulf Coast division, to Louisiana division as safety engineer.

A. B. Vanhooser, district superintendent in Kelsey district, to Government Wells district as district superintendent; H. P. Kemp, district superintendent in Government Wells district, to Stratton district as district superintendent; J. H. Galloway, assistant district superintendent, appointed district superintendent in Kelsey district; J. C. Arvin, district chief clerk, from Government Wells to Stratton district; John R. Goddard, district chief clerk, from Luling district to Government Wells district; B. S. Wadlington, assistant district chief clerk, appointed district chief clerk in Luling district.

R. M. HESS, Shell Oil Company, has been transferred from Lake Charles, Louisiana, to Kilgore, as production engineer for the East Texas division.

KURT H. de COUSSER recently was elected president of the Oil and Gas Association of Michigan; James C. Graves was elected vice president; W. B. Pardoe, secretary; George B. Talbot and W. P. Clarke, treasurers; H. M. McClure, executive secretary.

WALTER GEIST, vice president of Allis-Chalmers Manufacturing Company, was elected a director of York Ice Machinery Corporation at a meeting of the board of directors of the corporation held at York, Pennsylvania, on December 12, 1941.

JAMES E. HOLMES has been appointed assistant manager of tubular sales of Youngstown Sheet and Tube Company, with headquarters at Youngstown, Ohio. He formerly was associated with Republic Steel Corporation.

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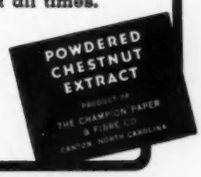

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E. E. DeBACK, general manager of Chicago Corporation, Corpus Christi, Texas, died New Year's afternoon from a heart attack. Funeral services were held at Corpus Christi January 3. DeBack was a vice president of the Natural Gasoline Association of America, and headed the American Recycling Association until that organization recently merged with the Natural Gasoline Association.

PAUL WEAVER, Gulf Refining Company, Houston, will address a technical meeting of the Shreveport Geological Society at 7:30 p.m. January 5, at Shreveport on "Method of Formation of Large Salt Deposits."

L. P. TEAS has announced opening of an office for consulting work in geology and evaluation of oil and gas properties with James I. Riddle as associate, Commerce Building, Houston.

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Complete Evaluation of Crude Oils

Long Distance 267, Box 138, Houston, Tex.

ROGER A. HOWE, Shreveport, has resigned as production superintendent of The Carter Oil Company's Southern Division. Howe terminated his 30-year period with The Carter Oil Company and other Standard Oil Company of New Jersey affiliates January 1, to become vice president and general manager of the newly organized McKamie Gas Cleaning Company, formed to purchase and process "sour" gas from the McKamie field in Lafayette County, Arkansas. The new concern will install a "sweetening" plant to purify McKamie gas by removing the hydrogen sulphide; also a gasoline absorption plant to process the purified gas and manufacture casinghead gasoline and by-products. Both plants will be located adjacent to the field.

Howe, age 51, a native of Canton, Ohio, who received his grade and high school education in Findlay, Ohio, started as a day laborer with Ohio Oil Company in 1910, and has literally grown up in the oil business. He was transferred to Standard Oil Company of Louisiana in 1911 and with the exception of two short breaks in service, has been continuously employed by various Standard affiliates since that time, holding various positions including those of assistant warehouseman, warehouseman, gasoline plant repairman, and gasoline plant foreman.

Be became Standard Oil Company of Louisiana assistant general superintendent in charge of gasoline plants in August, 1922, and was elevated to company general superintendent in November, 1936.

When Standard Oil Company of Louisiana producing operations were transferred to the newly organized Louark Producing Company in 1939, Howe became associated with the new company as production superintendent, and continued in this capacity until May, 1941, following the Carter-Louark merger when Louark producing operations in Arkansas and Louisiana were incorporated into Carter's Southern Division.

FERD J. SPANG, president, Spang & Company, visited with friends and relatives in the upper Mid-Continent during the holidays.

NORMAN CROSS, Superior Oil Company executive at Tulsa, and past president of Petroleum Accountants Society of Oklahoma is resigning to accept the management of the Kennedy office building and interests in Tulsa and vicinity.

JOE BLACKMAN, deputy conservation officer in charge of the Tulsa office of Oklahoma Corporation Commission is convalescing after an emergency appendectomy.

H. B. BLOXOM, sales staff of Fred E. Cooper, addressed the Nomads in meeting at Tulsa on Canada and oil production in that country.

FIRST LIEUTENANT BEN ALTMAN, Fort Sill, formerly district news editor in Tulsa for THE OIL WEEKLY, has been visiting friends in the oil offices in the Mid-Continent during a brief furlough.

HARRY WRIGHT, National Petroleum Engineering Company, Tulsa, discussed Estimation of Underground Oil Reserves before Engineers Club of Tulsa.

JOHN A. RITTER, Dallas division superintendent for Sun Oil Company, departed last week for Phoenix, Arizona, where he will spend the next month recuperating from a leg ailment.

HAL V. DOUGLAS, scout for Magnolia Petroleum Company in Wewoka, Okla., district, has been promoted to land man, succeeding John T. Jones, who has been given special assignments.

M. E. KENDRICK, 36, South Louisiana district drilling superintendent for Imperial Drilling Company, died in Shreveport January 1 after two months illness. The widow and an 11-year-old son survive. Interment was at his former home at Vivian, Louisiana.

DEL J. CROSBY has been appointed chief scout for Humble Oil & Refining Company, Houston, succeeding James I. Riddle who resigned January 1, 1942. Crosby formerly was East Texas division scout located at Tyler.

JOHN H. JAMISON, 3003 Navigation Boulevard, Houston, has been appointed Texas distributor for Coast Metals, Inc., Canton, Ohio, manufacturers of hard-facing metals.

As part of the Franks Manufacturing Corporation of Tulsa tenth anniversary celebration, 11 men were honored as the 10-year employes. In the photo, left to right, are: front row, H. H. Franks, president; Milt Rutledge, Arthur Conwell, Edward Masek, Preston A. Pendergraft, Aaron A. Marlow and Carl White, Jr., vice president and part owner; back row, Mike Pallein, R. E. Kirberger, William Newhouse, James Turner, Jesse McPike, and Bud Johnson.

Squeaks from the Bull Wheel

Wrapping

"Tommy, can you tell me one of the uses of cowhide?"

"Er, yes, sir. It keeps the cow together."

Polite Conversation

"Darling, this steak tastes like burnt leather."

"My, what strange things you've eaten in your life."

Too Good

"I hear you lost your job. Why did the superintendent fire you?"

"You know what a superintendent is—the guy who stands around watching his men work."

"Yeah, but what's that got to do with it?"

"He got jealous of me. Everyone in the plant thought I was the superintendent."

Third Grade

"Spell straight."

"S-t-r-a-i-g-h-t."

"Correct; what does it mean?"

"Without ginger ale."

Get Results

I always feel better after a good, hard cry.

So do I. It sort of gets things out of your system.

No, it doesn't get things out of my system, but it does get things out of my husband.

Agin' the Law

"Pardon, miss, but swimming is not allowed in this lake?"

"Why didn't you tell me before I undressed?"

"Well, there ain't no law against undressin'."

Couldn't Take It

"My husband was sick with the flu and was in bed six days with two nurses and a doctor. On the seventh day he died of a stroke. What could have brought it on?"

"Maybe six days in bed with two nurses and a doctor was too much crowding for a man of 68."

All Set

Handsome—Can you read my mind?

Beautiful—Yes.

Handsome—Go ahead.

Beautiful—No, you go ahead!

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It Could Happen

The club secretary caught one of the entrants driving off about a foot in front of the teeing mark.

"Here! you can't do that. You're disqualified!"

"What for?"

"Why, you're driving off in front of the mark."

"G'wan back to the clubhouse. I'm playin' my third stroke!"

Ambition

"Dad, what was your great ambition when you were a boy?"

"To wear long pants. And I've had my wish. If there is anybody else in the country that wears his pants longer than I do, I'd like to see him."

College Correspondence

"Please send me money for a new dress immediately. Have had several dates with Jimmy and have worn each of my dresses once. We have a date tomorrow night and I must have another dress right away. If you don't send the money, send a new dress."

"Get yourself a new boy friend and start over again."

Proof the Other Way

A miner and his wife were emigrating to America. The clerk, reading his passport, said: "Yes, this seems all all right, but how are you going to prove this woman is your wife?"

"Ma bonnie lad, if you can prove she isn't, Aa'll give tha ten pund'!"

Sequence

How's Collins?

Flat on his back.

Why, only last night I saw him dancing with a blonde.

So did his wife.

Joints

"Ouch! I've thrown my knee out of joint."

"Aw, don't let that bother you. I've had my whole body thrown out of lots of joints."

Matter of Form

"Sorry, madam, but licenses are issued only when your form is filled out properly."

"Why, I like your nerve, sir. We can get married, no matter what I look like."

OIL & GAS LAW

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For oil producers, marketers, operators. Presented by a group of Houston's most prominent attorneys. Meetings held each Thursday, 8 to 10 o'clock, for 16 weeks beginning January 15. Folder on request.

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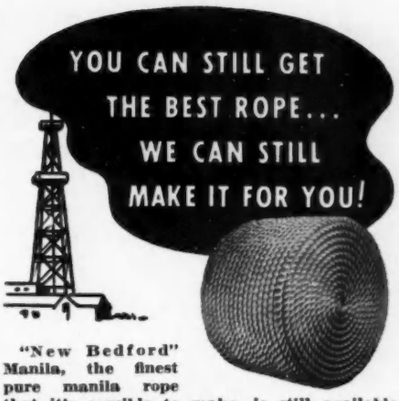

"New Bedford" Manila, the finest pure manila rope that it's possible to make, is still available to oil producers. The Office of Production Management, Washington, D. C., permits us to continue the production of this premium rope for certain key industries vital to Victory. Yours, the oil business, is one of these.

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POSSIBLE FUTURE OIL PROVINCES *of the* UNITED STATES AND CANADA

A symposium conducted by the Research Committee of The American Association of Petroleum Geologists, A. I. Levorsen, chairman. Papers read at the Twenty-sixth Annual Meeting of the Association, at Houston, Texas, April 1, 1941, and reprinted from the Association Bulletin, August, 1941.

•

Edited by A. I. LEVORSEN

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The purpose of this symposium is to get an over-all picture of the undiscovered oil resources of North America, north of the Rio Grande. Ten geological organizations have participated, to the end that this survey has behind it the authority of many geologists representing state and national geological surveys, large and small oil companies, and consulting and independent geologists. A map and a section of geology, stratigraphy, and structure illustrate each province description.

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Box 979, Tulsa, Okla., U. S. A.

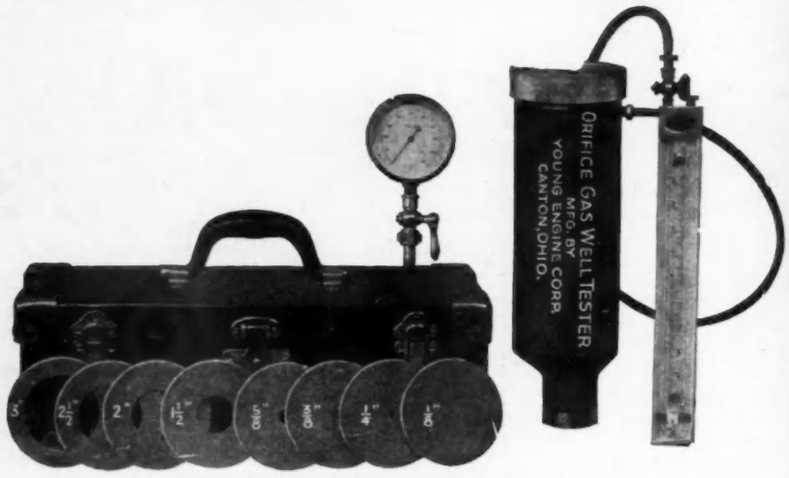
NOTES FOR THE
Equipment Buyer and User

Gas Tester
YOUNG ENGINE CORPORATION

Young Engine Corporation, Canton, Ohio, has released new information on the Orifice Gas Well Tester.

The tester is said to have a high rating for accuracy and simplicity. It not only makes possible a more accurate gauge on the volume of a gas well than obtainable by the pitot tube method, but it also is so sensitive that it detects and shows if there is fluid over any gas producing sand.

Where a well is to be turned into a line against existing line pressure, the Young Orifice Gas Well Tester supplies exact data on the volume of gas the well can deliver against any given line pressure. The unit comes packed in a convenient carrying case.



Young Orifice Gas Well Tester

Welder Control
LINCOLN ELECTRIC COMPANY

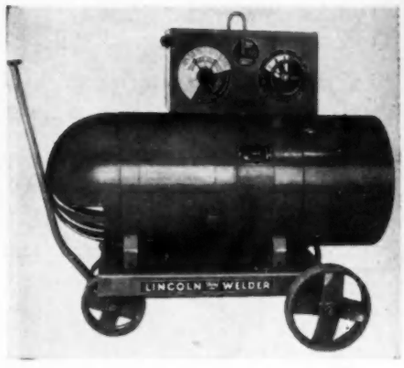
The Lincoln Electric Company, Cleveland, Ohio, has announced an improved and simplified design of its exclusive system of "dual continuous control" for arc welding machines which eliminates the need for meters showing volts and amperes.

This new facility has been in engineering design development and preliminary production line-up for some time and is said to be achieved as a result of the accuracy possible in current adjustments with "dual continuous control" in conjunction with Lincoln's self-indicating pre-set dials.

Welders have both job selector and current control calibrated and equipped with dials which indicate the type of work and the number of amperes for each and every setting.

Another feature is that both voltage control (job selector) and current control are continuous in operation. This design provides literally thousands of possible combinations of voltage and current. Being continuous, the control can be advanced or retarded in increments as fine as desired.

Advantages of the new development, as emphasized by the manufacturer, include (1) ability to set and read the current from the dial; (2) elimination of trouble and expense resulting from meter breakage; (3) elimination of meter in-accuracy after a few months use in service in the field; (4) availability of positive polarity reversal; and (5) ability to quickly verify polarity by noting position of switch handle.



Lincoln "Shield-Arc" welder which provides accurate current and voltage control.

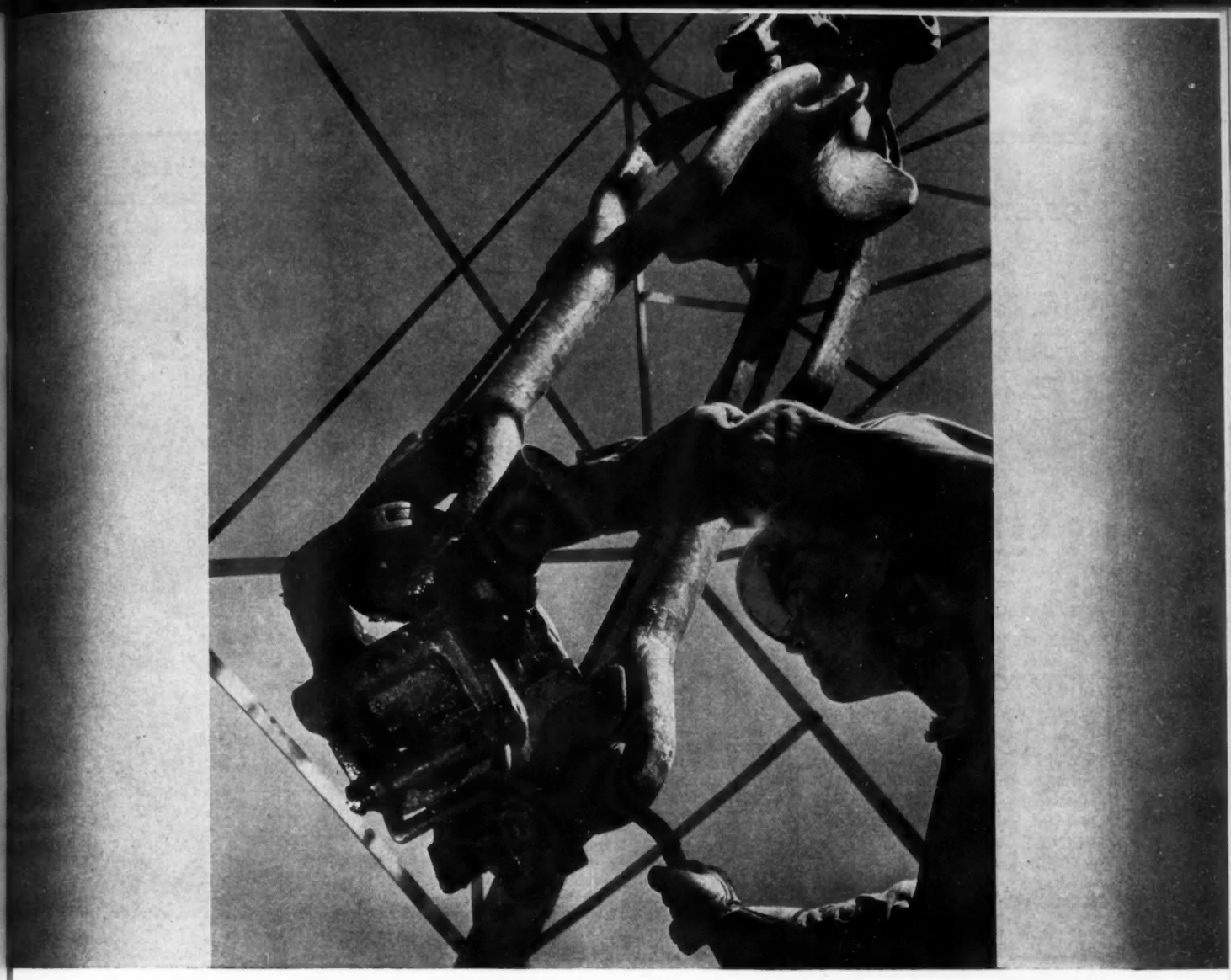
WEIGHT INDICATOR POINTS
PORTABLE MUD PUMP GAUGES have to take more pounding than a bargain-basement customer on dollar day, what with violent pump pulsations, vibrations, high pressures and all.
Can they stand it? If it's a Martin-Decker Unitized Gauge, you needn't worry. In this gauge you get sensitivity over the entire pressure range . . . accuracy to the pound . . . and smooth, easy-to-read gauge hand movement. (You can tell pressure by position of the hand, even when you can't read figures on the dial.)
And yet this laboratory-accurate gauge has ample oil field ruggedness for years of trouble-free service on well after well!
MARTIN-DECKER CORP., LONG BEACH, CALIF.

Caliper

Airetool Manufacturing Company, Springfield, Ohio, has announced a new pistol grip caliper. It can be used for calibrating tube ends after rolling or checking for erosion and corrosion points. It is said to be extremely handy to operate. Calibration is effected by three points. Diameter from 2 to 6 inches can be secured with the same tool by using different sets of measuring points. The scale is direct reading and is marked off in 64ths of an inch.

Cast Steel Valves

A new 56-page Catalog No. 12—Section C, for cast steel valves has been issued by The Edward Valve & Manufacturing Company, East Chicago, Indiana. Included are complete design, dimensional and metallurgical descriptions of Edward cast steel stop, check, and stop-check valves. Stop valves are both globe and angle, sizes 2½- to 16-



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The service of 4140 in this particular application is typical of what Molybdenum steels of various analyses are doing in the interest of economical drilling at many points in the rig. These steels and their uses are fully described in our technical book, "Molybdenum Steel in Oil Production", which will be sent free on request.

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inch for pressures to 2500 pounds. Check valves are horizontal, vertical, angle and "Y" in sizes 2½- to 14-inch for all pressures. Both screwdown and separated types of feed-line stop-checks are shown in sizes 2½- to 8-inch for pressures to 1500 pounds.

Also described in the catalog are Edward patented Impactor handwheels, throttlers, by-passes, etc. In the back section, current pressure-temperature adjusted service ratings, flange facing information and drawings and helpful tips on valve usage have been included.

Hose Manual

United States Rubber Company, Rockefeller Center, New York, has issued a hose manual, "Eight Plies of Useful Hose Information," in the form of an enlarged section of hose with each page representing one ply.

Houston "Y" Law School Offers Oil and Gas Lecture Course

The South Texas School of Law of the Houston YMCA will offer its seventh annual special series of 16 lectures on the law of oil and gas each Thursday evening from 8 to 10 beginning on January 15 and ending on April 30.

This course includes such practical aspects of the law that it should prove especially valuable to men and women employed in many departments of the oil and gas industry.

The lectures are presented in language clearly understandable to laymen as well as lawyers. Such phases of the industry as leases, royalties, operating agreements, governmental regulations, mineral rights, etc., are of immediate value not only to those employed in the industry, but also to property owners, public officials, abstractors, and legal stenographers, as well as others interested in the acquisition of interests in oil properties.

The 16 lectures will be given by the following lawyers: Charles I. Francis, of Vinson, Elkins, Weems and Francis; James L. Shepherd, Jr., of Baker, Botts, Andrews and Wharton; Herman P. Pressler, Humble Oil & Refining Company, legal staff; T. J. Lawhon, The Texas Company, legal staff; J. Q. Weatherly, Humble Oil & Refining Company, legal staff; A. W. Bounds, Stanolind Oil & Gas Company, legal staff; H. E. Bell, of Humble Oil & Refining Company, legal staff (retired).

Reed Roller Bit Company has moved its warehouse from the KMA field to 700 Virginia Street, Wichita Falls, Texas. The new, modernistic front warehouse is better equipped to serve the KMA field and surrounding territory, and is manned by the same personnel that has served that section in the past.

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